V-TAT-000006-2013.00
Initial Title V Permit

eog resources

EOG Resources, Inc.
600 Seventeenth Street
Suite 1000N
Denver, CO 80202
Main: 303-572-9000
Fax: 303-824-5400

RECEIVED
OCT 28 2013
8P-AR

October 1, 2013

Environmental Protection Agency
Eric Wortman
TV Permitting Coordinator
U.S. EPA, Region 8
1595 Wynkoop Avenue, 8P-AR
Denver, Colorado 80202-1129

Re: Air Permit Application, TV on Indian Lands Fort Berthold Indian Reservation, North Dakota.

EOG Resources, Inc. (EOG) is submitting a TV Part 71 operating permit application for the West Clark central facility. The information provided is redundant due to the Tribal NSR program and a previously submitted registration.
Applicability to the major source program is due to inability to sale gas reliably based on compression and infrastructure in the gas gathering system. As these issues are resolved in the short term, this facility will emit at levels below the applicability thresholds for TV.

EOG believes all relevant information is provided, however if you have any questions or concerns, please call me at your convenience.

Thank You,

Curtis Rice
SR. Environmental Specialist

cc: file
Tex Hall, Chairman Three Affiliated Tribes

AECOM Environment

Prepared for:
EOG Resources, Inc.
Denver, Colorado

Prepared by:
AECOM
Fort Collins, Colorado
60154143
September 2013

EOG Resources, Inc.

Initial Title V Operating Permit Application
West Clark Central Production Facility
McKenzie County, North Dakota

EOG RESOURCES, INC.
P.O. BOX 4362
HOUSTON, TEXAS 77210-4362

CHECK No. 1192165396

VENDOR No. 323182

09/26/13

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US ENVIRONMENTAL PROTECTION
AGENCY
FINES & PENALTIES
PO BOX 979077
ST LOUIS, MO 63197 9000

VOUCHER NO.	INVOICE NO.	INVOICE DATE	DESCRIPTION	NET AMOUNT
654601	SEP2513USEPAA	09/25/13	W CLARK PAD WELL TITLE V	13,469.57
			TOTAL CHECK AMOUNT USD	13,469.57

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eogresources

EOG RESOURCES, INC.
P.O. BOX 4362
HOUSTON, TEXAS 77210-4362

VENDOR No. 323182

62-20
311

No. 1192165396

09/26/13

$$$$$$$$$13,469.57

NOT VALID AFTER 90 DAYS

PAY TO THE ORDER OF
US ENVIRONMENTAL PROTECTION
AGENCY
FINES & PENALTIES
PO BOX 979077
ST LOUIS, MO 63197 9000

Thirteen Thousand Four Hundred Sixty-nine and 57/100 Dollars

AUTHORIZED SIGNATURE

CITIBANK, N.A.
ONE PENN'S WAY, NEW CASTLE, DE 19720

OPERATIONS ACCOUNT

⑈1192165396⑈ ⑆031100209⑆ 3911028 2⑈

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1.0 Introduction

EOG Resources, Inc. (EOG) owns and operates the West Clark Central Production Facility (CPF) oil and gas production facility. The facility is located within the exterior bounds of the Fort Berthold Indian Reservation. The facility is located at latitude 47.8855707° North and longitude 102.7737037° West in McKenzie County, North Dakota. A facility location map is presented as **Figure 1-1**.

The facility is a major stationary source of air pollutants, as defined in Part 71 (§71.2) and Section 302 of the Act, as it has the potential to emit, 100 tons per year (tpy) or more of an air pollutant subject to regulation. As a new major source, the facility is required to submit an application for an operating permit within 12 months after the source becomes subject to the permit program pursuant to Part 71.5(a)(1). The facility became subject to Part 71 on October 7, 2013.

The facility is submitting this application to fulfill regulatory requirements. Once the facility is tied into the gas gathering system the flare will no longer be used to control natural gas venting emissions and the facility will fall below Title V emission thresholds.

This application contains several additional sections. Section 2 provides a process description of the oil and gas facility. Section 3 contains a detailed discussion of potential emissions and Section 4 provides a discussion of regulatory applicability.

Appendix A contains the completed EPA 40 CFR Part 71 Federal Operating Permit Program application forms. Appendix B contains the detailed emissions calculations and supporting documentation, such as annual production data, and the Bryan Research & Engineering, Inc. ProMax™ 3.2 simulation software program (ProMax™). Appendix C contains the production data for all eight wells located at the facility, and Appendix D contains the oil and gas laboratory analyses.

Figure 1-1 West Clark Central Production Facility Location Map

2.0 Process and Equipment Description

2.1 Introduction

West Clark CPF is an oil and gas production facility located in McKenzie County, North Dakota that currently receives production from the following eight wells located at the pad:

- West Clark 1-2413H (API No. 33-053-03449)
- West Clark 2-2425H (API No. 33-053-03448)
- West Clark 3-2413H (API No. 33-053-03445)
- West Clark 4-2425H (API No. 33-053-03444)
- West Clark 5-2425H (API No. 33-053-04141)
- West Clark 100-2413H (API No. 33-053-03447)
- West Clark 101-2425H (API No. 33-053-03446)
- West Clark 102-2413H (API No. 33-053-04142)

2.2 Equipment Description

Equipment onsite with significant emission rates includes: twelve (12) 400 bbl crude oil tanks, four (4) 400 bbl produced water tanks, three (3) natural gas flares, crude oil truck loading, and fugitive emission leaks.

Insignificant emission sources onsite includes: two (2) 750,000 Btu/hr heater treaters.

2.3 Process Description

Oil and gas from the wells flow to a heater treater/separator where water, oil and gas are separated. Oil is directed to a vapor recovery tower (VRT) where remaining light end hydrocarbons are separated from the oil. The oil is then sent to atmospheric storage tanks and trucked from the facility. The overhead gas from the heater treaters is sent to the flares for control until the facility can be tied into a pipeline. The flashed vapors from the VRT are fed into the treaters's gas stream which is either flared or sent to pipeline once installed.

2.4 Facility Location

Table 2-1 presents a summary of the location data for the facility, while **Figure 2-1** provides a site facility diagram complete with emission unit IDs.

Table 2-1 West Clark Central Production Facility Site Location

Township	T 151N
Range	R 95W
Section	SE/NE Quarter of 24
Longitude	W 102° 46' 25.33"
Latitude	N 47° 53' 8.05"
Mean Elevation	2,320 Feet

Equalizer Lines
Tank Vent Line
Water Line
Production Line
Recycle Line
Sales Line
Gas Line

Equalizer Valve
Water Valve
Production Valve
Sales Valve
Recycle Valve

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Site Facility Diagram

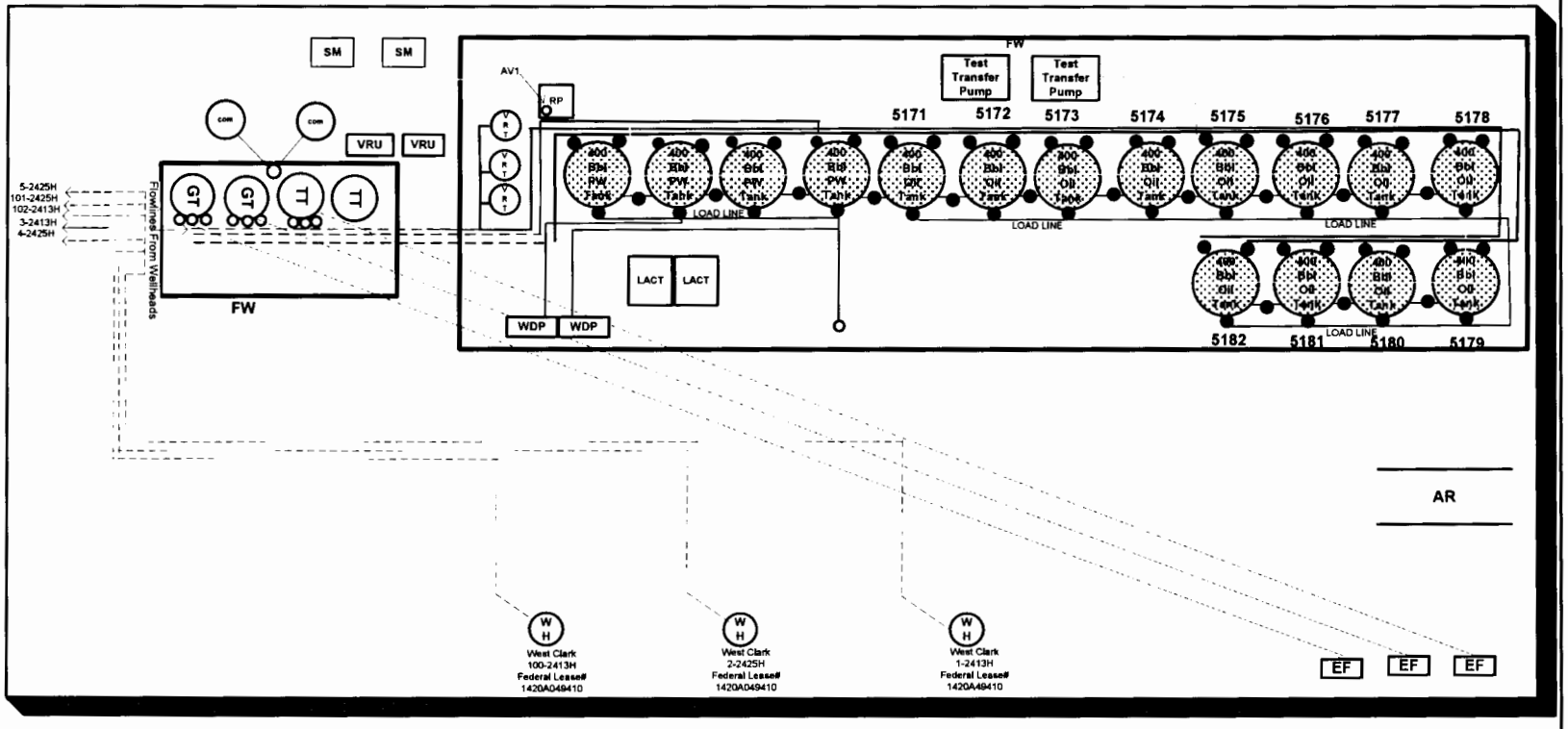
Well Name: West Clark Central Production Facility
1/4 1/4: SENE **Sec:** 24 **T:** 151N **R:95W**
County: McKenzie **State:** ND
Lease: **CA#:**
Type of well: **Injection:**
Oil: X **Gas:** **Tank Battery:** X

EOG Resources, Inc. site facility diagrams & site security plans are located at the Stanley office in Stanley, North Dakota. The office is located at 6201 81st Ave NW and normal business hours are 7:00am to 4:30pm CST.

Valve	Production Phase	Sales Phase	Water Drain
PV	SO	SC	SC
SV	SC	SO	SC
RV	SC	SC	SC
EV	SO	SC	
LL	SC	SC	
PWV	SO	SC	

EQ Lines are sealed open when Lact IN SERVICE
EQ Lines are sealed closed when Lact NOT in service
Equalizer Lines (valves are sealed closed during Sales Phase)
Production Water Tanks when not in use are closed and sealed

Revised:4/13/2012



Abbreviations

AM= Allocation Meter
AR = Access Road
AV = Appendage Valve
BP = Booster Pump
CHT = Chemical Tank
COM = Combuster
COMP = Compressor
CON = Condensor
CT = Condensate Tank
DH = Dehydrator
DL = Dump Line
EP = Electrical Panel
ET = Emergency Tank
EF = Engineered Flare
FGS = Fuel Gas Scrubber
FT = Fiberglass Tub
FW = Firewall
GB = Gas Buster
GT = Group Treater
GEN = Generator
LACT = LACT Unit
LH = Line Heater
LV = Load Valve
MAN = Manifold
MB = Methanol Bath
OT = Oil Tank
PIGL = Pig Launcher
PIGR = Pig Receiver
PL = Production Line
PP = Power Pole
PT = Propane Tank
PU = Pumping Unit
PV = Production Valve
PW = Produced Water
RL = Recycle Line
RP = Recycle Pump
RV = Recycle Valve
SC = Sealed Closed
SGS = Sales Gas Scrubber
SL = Sales Line
SM = Sales Meter
SO = Sealed Open
SP = Separator
SV = Sales Valve
T = Treater
TT = Test Treater
TP = Trace Pump
WD = Water Drain
WDP = Water Disposal Pump
WFP = Water Flood Pump
WH = Wellhead
VRT = Vapor Recovery Tower
VRU = Vapor Recovery Unit
———— = Buried Line
———— = Unburied Line

3.0 Facility Emissions

3.1 General

Potential emissions (point and fugitive) from the entire facility total 38.6 tons per year (tpy) for oxides of nitrogen (NO_x), 126.5 tpy for carbon monoxide (CO), 234.7 tpy for volatile organic compounds (VOC), 0.20 tpy for sulfur dioxide (SO_2), 6.7 tpy for particulate matter less than 10 microns in diameter (PM_{10}), and 6.7 tpy of $PM_{2.5}$. As a result, the facility is a minor source with respect to prevention of significant deterioration (PSD) regulations and a major source with respect to Part 71 Operating Permit (Title V) requirements since the facility-wide criteria pollutant potential to emit (PTE) emissions are greater than 100 tpy for CO and VOC emissions. Emissions were estimated using manufacturer's data where available. Where vendor data were not available for a specific pollutant, U.S. EPA emission factors from AP-42 or other EPA approved software was used (e.g., ProMax™).

The detailed emission calculations are provided in **Appendix B, Tables B-2 through B-9. Table B-1** provides the total PTE for all sources located at the facility, and Table B-9 provides the total GHG emissions for the facility. Oil, gas, and produced water production data for all eight wells is provided in Appendix C, while the oil and gas extended analyses data used in the tank emission calculations are provided in Appendix D.

3.1.1 Condensate Storage Tanks Emission Calculations

Twelve oil tanks are used to store oil produced from the wells onsite. Methane, CO_2, VOC and HAP emissions from the unit were calculated using ProMax™. Inputs to the model are based on a onsite representative pressurized oil sample and the expected operating conditions. A daily condensate throughput value of 3,900 barrels per day (bbl/day) was used for estimating PTE from the condensate tanks. The extended liquid analysis for the condensate including RVP and API gravity are provided in **Appendix D**. The ProMax™ calculation report is provided in **Appendix B**. The tank vapors from the condensate tanks are controlled and routed to two (2) smokeless enclosed combustors (COM1 & COM2) that have a vendor guaranteed destruction efficiency of 98%.

3.1.2 Produced Water Storage Tank Emission Calculations

Four produced water tanks are used to store water produced from the wells onsite. Emissions from the produced water tanks were calculated using Colorado Department of Public Health and Environment's (CDPHE) published produced water tank emission factors in units of pounds of pollutant per barrel (lb/bbl) of produced water. Produced water tank emissions are provided in **Table B-3** of **Appendix B**. The tank vapors from the produced water tanks are also controlled and routed to the smokeless enclosed combustor (COM).

3.1.3 Enclosed Combustor (COM)

As discussed above, VOC and HAP emissions from the condensate tanks and produced water tanks are controlled via two enclosed combustors (COM1 & COM2) which are also known as a vapor combustion unit (VCU). The combustors are Cimarron ECD-HV 48 inch diameter by 12 feet tall enclosed combustion devices (ECD). They have a continuous pilot, with natural draft and auto ignition. The combustors have a vendor guaranteed destruction efficiency of 98%. Detailed emissions calculations for the enclosed combustors are shown in **Appendix B, Tables B-3 and B-4**.

The sources being controlled by the COMs are all of the tanks and the VRT until the facility can be tied into a pipeline, at which time the VRT flashed vapors will be routed to the pipeline via the VRU.

3.1.4 Temporary Flares (FL-1, FL-2, & FL-3)

Three flares are used to control the produced natural gas until the facility can be tied into a natural gas gathering system. VOC and HAP emissions were calculated using the actual well gas production and an extended gas analysis from the facility. Combustion emissions were calculated using the emission factors in USEPA AP 42 Table 13.5-1. Detailed emission calculations are provided in **Appendix B, Table B-5.**

3.1.5 Truck Loading Operations

The condensate is removed via tanker truck and as a result emissions will occur during truck loading operations. Emissions from truck loading operations are based on the barrels per day of condensate produced. The amount of condensate loaded will be the same as is produced and stored. USEPA emission factors from AP-42, Chapter 5.2, were used to estimate VOC emissions from truck loading operations. Representative parameters were taken from the condensate sample, E&P tanks run and meteorological data for Williston, ND. Detailed emission calculations are provided in **Appendix B, Table B-6**.

3.1.6 Process Heaters (Separator/Heater Treater Burners & Reboilers)

Emissions from the process heaters (separator burners and reboilers) were calculated based on the maximum design rating of each unit's input basis. USEPA emission factors from AP-42, Chapter 1.4, were used to estimate emissions for all pollutants. Annual PTE emissions are based on unrestricted operation of 8,760 hr/yr. Detailed emission calculations for the process heaters are provided in **Appendix B, Tables B-7 and B-7a**.

3.1.7 Fugitive Equipment Leaks

Fugitive Component Leak Emissions were calculated based on the emission factors in Table 2-4 of Protocol for Equipment Leak Emission Estimates (EPA 453/R-95-017). Components in each service were estimated using a representative count per piece of equipment. Representative stream compositions were taken from the extended analyses used for the condensate tank and flare emission estimates. Detailed emission calculations are provided in **Appendix B, Table B-8**.

3.1.8 Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions include combustion emissions from the enclosed combustors (COM1 & COM2), temporary flare, tanks, heater treaters, and fugitive emissions. GHG emissions calculations are provided in **Appendix B, Table B-9**.

4.0 Applicable Requirements & Permit Shield

4.1 General

This chapter presents a review of the air quality regulations and standards that govern operations at the West Clark CPF. Only federal air regulations were reviewed for applicability as well as requirements pursuant to existing permits and consent agreements. Specifically the following regulations, standards, and provisions were reviewed:

- New Source Review (Prevention of Significant Deterioration [PSD]);
- Minor Source New Source Review;
- Federal Implementation Plan (FIP)
- New Source Performance Standards (NSPS);
- National Emission Standards for Hazardous Air Pollutants (NESHAP);
- Compliance Assurance Monitoring (CAM) Regulations;
- Risk Management Program (RMP) Standards;

The federal regulatory programs, as promulgated by the USEPA, and administered by Region 8 have been developed under the authority of the 1970 CAA (or Act) and subsequent amendments.

4.2 Facility Permitting History

The site has never had a permit. It began operations in 2012.

4.3 Applicability of PSD – New Source Review

There are three basic criteria used to determine PSD applicability. The first and primary criterion is whether the proposed project is sufficiently large in terms of emissions to be considered a "major" stationary source or a "major" modification to an existing "major" stationary source. Source size is defined in terms of "potential to emit", which is its capability at maximum design capacity to emit a pollutant, except as constrained by federally enforceable permit conditions. To determine whether a new or modified source is "major" and subject to requirements of PSD rules contained in 40 Code of Federal Regulations (CFR) Section (§)52.21, §52.21(b)(1)(i) states that a facility is classified as a "major stationary source" if the facility emits or has the potential to emit:

1. For categorical sources (40 CFR §52.21[b][1][i][a]) - 100 tpy or more of a regulated air contaminant (other than GHGs) in an area designated attainment for that air contaminant; or
2. For other sources – 250 tpy or more of a regulated air contaminant (other than GHGs) in an area designated attainment for that air contaminant.

The definition for major stationary source set out at 40 CFR §52.21 lists 28 Categorical Sources. Oil and gas production facilities are not one of the 28 named source types listed in Section 169 of the Clean Air Act; therefore, 250 tpy is the threshold for major source status for all criteria pollutants other than GHGs, which the threshold is set at 100,000 tpy CO_2e.

The second criterion is that an attainment pollutant be emitted in, or increased by, "significant" amounts by the project. Significant increases in emission rates are subject to PSD review in two circumstances:

1. For a new source which is major for at least one regulated attainment pollutant, all pollutants for which the area is classified as attainment and which are emitted in amounts equal to or greater than those specified in Table 4-1. For a modification to an existing major stationary source, if both the potential increase in emissions due to the modification itself, and the resulting net emissions increase of any regulated, attainment, or non-criteria pollutants are equal to or greater than the respective pollutant's significant emission rates listed in Table 4-1, the modification is considered "major" and subject to PSD review.
2. For a new major stationary source or major modification to an existing major stationary source, any emission rate at the new source or net emissions increase associated with a modification to an existing major stationary source that is constructed within 10 kilometers (km) of a Class I area, and which would increase the 24-hour average concentration of any regulated pollutant in that area by 1 microgram per cubic meter or greater.

Table 4-1 PSD Significance Emission Rates

Pollutant	PSD Significant Emission Rates (tpy)
Nitrogen Oxides (NO_x)	40
Carbon Monoxide (CO)	100
Volatile Organic Compounds (VOC)	40
Sulfur Dioxide (SO_2)	40
Particulate Matter (Total) (PM)	25
Particulate Matter (Inhalable) (PM_{10})	15
Particulate Matter (Inhalable) ($PM_{2.5}$) [1]	10
Lead	0.6
Fluorides	3
Sulfuric Acid Mist	7
Hydrogen Sulfide (H_2S)	10
Total Reduced Sulfur (including H_2S)	10
Reduced Sulfur Compounds (including H_2S)	10

[1] If the significant emission rate is triggered for either NO_x or SO_2 ($PM_{2.5}$ precursor pollutants), then the $PM_{2.5}$ significant emission rate is also triggered.

The third criterion for PSD applicability is that the new "major" stationary source or the modified source is located in an area that has been designated as attaining the NAAQS for any criteria pollutant. The West Clark CPF is located in an area designated as attainment for all criteria pollutants; therefore, PSD regulations will apply to the oil and gas production facility for all criteria pollutants requiring PSD review as determined by the first two criteria described previously.

As shown in **Table B-1** of **Appendix B**, the facility's potential criteria emissions other than GHGs are well below the 250 tpy threshold, and the CO_2e emissions are well below 100,000 tpy, therefore PSD regulations do not apply.

4.4 Minor Source New Source Review

The tribal minor source program applies to new and existing minor sources located on tribal land. It requires that sources which began construction prior to August 30, 2011 register with EPA by March 1, 2013. Sources that began construction after August 30, 2011 but before September 2, 2014 are required to register with EPA within 90 days of commencing operation. Sources that plan to begin construction after September 2, 2014 are required to obtain a permit prior to commencing construction. The West Clark CPF began construction after August 30, 2011 and began operations in October 2012. The initial registration was submitted to the EPA within 90 days of commencing operations.

4.5 Federal Implementation Plan

The FIP for oil and natural gas well production facilities on the Fort Berthold Indian Reservation applies to new and existing oil and gas production facilities located within the exterior bounds of the Fort Berthold Indian Reservation. It requires that sources control emissions from oil tanks and produced water tanks and natural gas venting. The rule is also a means of establishing federally enforceable controls on those sources. The West Clark CPF is subject to and in compliance with all the requirements of this regulation.

4.6 Applicability of Title V – Major Source Operating Permit

The facility is a major stationary source of air pollutants, as defined in Part 71 (§71.2) and Section 302 of the Act, as it has the potential to emit, 100 tpy or more of an air pollutant subject to regulation. As a new major source, the facility is required to submit an application for an operating permit within 12 months after the source becomes subject to the permit program pursuant to Part 71.5(a)(1). The facility became subject to Part 71 on October 7, 2012. This application serves to comply with this requirement.

4.7 Applicability of NSPS

NSPS set out at 40 C.F.R. Part 60 (Standards of Performance for New Stationary Sources) that are or may reasonably be considered to be relevant to the facility include:

- Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units;
- Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984;
- Subpart OOOO – Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution.

The following subsections provide applicability determinations for the NSPS cited above.

4.7.1 Subpart Dc – Steam Generating Units

The reboilers and separator/heater treater burners each have a maximum heat input capacity less than 10 MMBtu/hr, therefore they are not subject to NSPS Subpart Dc.

4.7.2 Subpart Kb – Volatile Organic Liquid Storage Vessels

Subpart Kb was reviewed with respect to the installation and operation of the twelve (12) 400 bbl capacity condensate tanks (16,800 gallons) and the four (4) 400 bbl capacity (16,800 gallons) produced water tanks located at the facility. The tanks are not affected by federal NSPS set out at 40 CFR Part 60 Subpart Kb because the tanks each have a design capacity less than or equal to 1,589.874 m3 (420,000 gallons) and they are each used for petroleum or condensate stored, processed, or treated prior to custody transfer [40 CFR §60.110b(d)(4)].

4.7.3 Subpart OOOO – Crude Oil and Natural Gas Production, Transmission and Distribution

Subpart OOOO applies to owners and operators gas wells, centrifugal compressors, reciprocating compressors, pneumatic controllers, natural gas processing plants, storage vessels, and natural gas sweetening units that commence construction modification or reconstruction after August 23, 2011. The facility does not operate natural gas wells, centrifugal compressors, natural gas processing plants, or sweetening units.

The storage tanks were constructed after August 23, 2011 and are therefore subject to the control, recordkeeping and monitoring requirements of this regulation. The source has until October of 2013 to comply with this regulation. The all pneumatic controllers onsite are no bleed and are therefore exempt from this regulation.

The facility does not operate any natural gas compressors.

4.8 40 CFR 63 National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories known as Maximum Available Control Technology or MACT standards affect certain designated industrial sources referred to as "source categories" that may emit or have the potential to emit one or more of 187 designated hazardous air pollutants (HAP). MACT standards (subparts) codified at 40 CFR Part 63, that may be relevant to the facility include:

- Subpart HH—National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities; and
- Subpart EEEE - Organic Liquids Distribution MACT.

4.8.1 Subpart HH – Oil and Natural Gas Production Facilities

Subpart HH applies to certain groupings of stationary sources "located within a contiguous area and under common control" within the boundary of a "facility", as defined at 40 C.F.R. §63.761. "Facility" is defined for the oil and natural gas source category (Subpart HH), as:

> *any grouping of equipment where hydrocarbon liquids are processed, upgraded (i.e., remove impurities or other constituents to meet contract specifications), or stored prior to the point of custody transfer; or where natural gas is processed, upgraded, or stored prior to entering the natural gas transmission and storage source category. For the purpose of a major source*

determination, facility (including a building, structure, or installation) means oil and natural gas production and processing equipment that is located within the boundaries of an individual surface site.

"Surface site" means:

any combination of one or more graded pad sites, gravel pad sites, foundations, platforms, or the immediate physical location upon which the equipment is physically affixed.

Special provisions for potential to emit and major source determinations for upstream production facilities were promulgated in Subpart HH as follows:

Major source, as used in [Subpart HH], shall have the same meaning as in §63.2, except that:

(1) Emissions from any oil or gas exploration or production well (with its associated equipment, as defined in this section), and emissions from any pipeline compressor station or pump station shall not be aggregated with emissions from other similar units to determine whether such emission points or stations are major sources, even when emission points are in a contiguous area or under common control;

(2) Emissions from processes, operations, or equipment that are not part of the same facility, as defined in this section, shall not be aggregated; and

(3) For facilities that are production field facilities [located prior to custody transfer], only HAP emissions from glycol dehydration units and storage vessels shall be aggregated for a major source determination. For facilities that are not production field facilities, HAP emissions from all HAP emission units shall be aggregated for a major source determination.

"Production field facilities" means those facilities located prior to the point of custody transfer.

"Custody transfer" is defined in Subpart HH (§63.761) to mean:

"the transfer of hydrocarbon liquids or natural gas: after processing and/or treatment in the producing operations, or from storage vessels or automatic transfer facilities or other such equipment, including product loading racks, to pipelines or any other forms of transportation. For the purposes of this subpart, the point at which such liquids or natural gas enters a natural gas processing plant is a point of custody transfer."

The West Clark CPF well site is located prior to "custody transfer" and meets the definition of "production field facility."

To determine if a production field facility that is located prior to custody transfer is a "major source," as defined in §§63.2 and 63.761, an owner/operator need only quantify HAP emissions from:

- Glycol dehydration unit process vents
- Storage vessels

For facilities that are not natural gas processing plants, Subpart HH regulates only glycol dehydration unit process vents and "storage vessels with the potential for flash emissions", as defined in §63.761. A facility that does not contain one or more of these affected sources is not subject to the rule [§63.760(d)].

There are 16 tanks (12 condensate tanks and four produced water tanks) that meet the definition of storage vessel located at the West Clark CPF well site. EOG does not operate any glycol dehydration units. The West Clark CPF is an Area Source of HAPs and does not have any applicable requirement under this subpart.

4.8.2 Subpart EEEE - Organic Liquids Distribution MACT

Subpart EEEE— National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline) affects organic liquids (non-gasoline) distribution (OLD) operations that are located at, or are part of, a major source of HAP emissions. An OLD operation may occupy an entire plant site or be collocated with other industrial (e.g., gas plant) operations at the same plant site. OLD operations do not include the activities and equipment, including product loading racks, used to process, store, or transfer organic liquids at oil and natural gas production field facilities, as defined in §63.761 of subpart HH [40 C.F.R. §63.2334(c)]. The West Clark CPF is a production field facility and is categorically excluded from regulation under Subpart EEEE.

4.9 Compliance Assurance Monitoring (CAM) Regulations

The Compliance Assurance Monitoring (CAM) Rule, 40 CFR Part 64, addresses monitoring requirements for certain emission units at major sources, thereby assuring that facility owners and operators conduct effective monitoring of their air pollution control equipment. An emission unit is subject to CAM if all of the following criteria are satisfied:

- The unit is subject to an emissions limitation or standard for the pollutant of concern;
- An "active" control device is used to achieve compliance with the emission limit; and
- The emission unit's pre-control potential to emit (PTE) is greater than the applicable major source threshold.

The CAM rule does not apply to facilities that are subject to Sections 111 (NSPS) or 112 (NESHAP) of the CAA or those sources subject to the Acid Rain Program and emissions trading programs. The oil tanks and flares at the West Clark CPF have pre-control emissions greater than major source thresholds. The unit plans to use the monitoring requirements in the Federal Implementation Program for oil and gas production facilities located in 40 CFR 49 Subpart K.

4.10 Risk Management Plan (RMP) Regulations

Title III of the 1990 CAA Amendments contains requirements for subject facilities that store and/or process certain hazardous substances to ensure their safe use. Under these requirements, facilities must identify and assess their hazards and carry out certain activities designed to reduce the likelihood and severity of accidental chemical releases. Section 112(r) of the CAA mandated the USEPA to publish rules for development and implementation of RMPs for sources with more than the threshold quantity of a listed regulated substance. The plans are designed to identify, prevent, and minimize the consequences of accidental releases. See 40 CFR 68. The three elements that should be incorporated into the risk management plan include:

- Hazard Assessment;
- Prevention Programs; and
- Emergency Response Program.

Because the West Clark CPF stores regulated substances prior to custody transfer it is exempt from the RMP regulation.

Appendix A

EPA 40 CFR Part 71 Federal Operating Permit Program Application Forms

EPA Form 5900-78 - General Information and Summary

EPA United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

GENERAL INFORMATION AND SUMMARY (GIS)

A. Mailing Address and Contact Information

Facility name **EOG Resources, Inc. – West Clark Central Production Facility**

Mailing address: Street or P.O. Box **600 17th Street, Suite 1000N**

City **Denver** State **Colorado** ZIP **80202** -

Contact person: **Curtis Rice** Title **Senior Environmental Specialist**

Telephone (**303**) **262-9946** - Ext.

Facsimile (**303**) **262-9449** -

B. Facility Location

Temporary source? ___Yes **X** No Plant site location **Fort Berthold, ND SE/NE Sec 24, T151N, R95W**

City State **North Dakota** County **McKenzie** EPA Region **VIII**

Is the facility located within:

Indian lands? **X** YES ___ NO OCS waters? ___YES **X** NO

Non-attainment area? ___ YES **X** NO If yes, for what air pollutants? ___

Within 50 miles of affected State? __ YES **X** NO If yes, What State(s)? ___

C. Owner

Name **EOG Resources, Inc.** Street/P.O. Box **600 17th Street, Suite 1000N**

City **Denver** State **Colorado** ZIP **80202** -

Telephone (**303**) **262-9946** - Ext

D. Operator

Name **EOG Resources, Inc.** Street/P.O. Box **600 17th Street, Suite 1000N**

City **Denver** State **Colorado** ZIP **80202** -

Telephone (**303**) **262-9946** - Ext

E. Application Type

Mark only one permit application type and answer the supplementary question appropriate for the type marked.

_X_ Initial Permit ___ Renewal ___ Significant Mod ___ Minor Permit Mod(MPM)

___ Group Processing, MPM ___ Administrative Amendment

For initial permits, when did operations commence? _10_ / _07_ / _2012_

For permit renewal, what is the expiration date of current permit? _____/____/_____

F. Applicable Requirement Summary

Mark all types of applicable requirements that apply.

___ SIP _X_ FIP/TIP ___ PSD ___Non-attainment NSR

_X_ Minor source NSR _X_ Section 111 ___ Phase I acid rain ___Phase II acid rain

___ Stratospheric ozone ___ OCS regulations __ NESHAP ___ Sec. 112(d) MACT

___ Sec. 112(g) MACT ___ Early reduction of HAP ___ Sec 112(j) MACT ___ RMP [Sec.112(r)]

___ Tank Vessel requirements, sec. 183(f)) ___ Section 129 Standards/Requirement

___ Consumer / comm.. products, • 183(e) ___ NAAQS, increments or visibility (temp. sources)

Has a risk management plan been registered? ___YES _X_NO Regulatory agency _____

Phase II acid rain application submitted? ___YES _X_NO If yes, Permitting authority _____

G. Source-Wide PTE Restrictions and Generic Applicable Requirements

Cite and describe any emissions-limiting requirements and/or facility-wide "generic" applicable requirements.

N/A

H. Process Description

List processes, products, and SIC codes for the facility.

Process	Products	SIC
Oil/ Gas Extraction	**Oil and Gas**	**1311**

I. Emission Unit Identification

Assign an emissions unit ID and describe each emissions unit at the facility. Control equipment and/or alternative operating scenarios associated with emissions units should by listed on a separate line. Applicants may exclude from this list any insignificant emissions units or activities.

Emissions Unit ID	Description of Unit
TK1 to TK12	**12-400 bbl oil storage tanks – controlled w/ 98% DRE combustor**
VRT	**Vapor Recovery Tower – controlled w/ 98% DRE combustor**
PW1 to PW4	**4-400 bbl produced water storage tanks – controlled w/98% DRE combustor**
FL1 to FL3	**Casing head gas flares, 98% DRE**
TLO	**Transfer of oil from tanks to trucks for haul offsite**
FUG	**Fugitive emissions from component leaks**

J. Facility Emissions Summary

Enter potential to emit (PTE) for the facility as a whole for each air pollutant listed below. Enter the name of the single HAP emitted in the greatest amount and its PTE. For all pollutants stipulations to major source status may be indicated by entering "major" in the space for PTE. Indicate the total actual emissions for fee purposes for the facility in the space provided. Applications for permit modifications need not include actual emissions information.

NOx **38.6** tons/yr VOC **234.7** tons/yr SO2 **0.20** tons/yr

PM-10 **6.7** tons/yr CO **126.5** tons/yr Lead **N/A** tons/yr

Total HAP **12.5** tons/yr

Single HAP emitted in the greatest amount **n-Hexane** PTE **7.2** tons/yr

Total of regulated pollutants (for fee calculation), Sec. F, line 5 of form FEE **278.7** tons/yr

K. Existing Federally-Enforceable Permits – NOT APPLICABLE

Permit number(s) **N/A** Permit type _____ Permitting authority _____

Permit number(s) _____ Permit type _____ Permitting authority _____

L. Emission Unit(s) Covered by General Permits - NOT APPLICABLE

Emission unit(s) subject to general permit **N/A**

Check one: ___ Application made ___ Coverage granted

General permit identifier _____ Expiration Date ____/____/____

M. Cross-referenced Information

Does this application cross-reference information? ___ YES **X** NO (If yes, see instructions)

EPA Forms 5900-80 through 82 – Emission Unit Description

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

EMISSIONS UNIT DESCRIPTION FOR VOC EMITTING SOURCES (EUD-2)

A. General Information

Emissions unit ID **TK1 to TK12** Description **12 Oil Storage Tanks**

SIC Code (4-digit) **1311** SCC Code **31000132**

B. Emissions Unit Description

Equipment type **12 – 400 bbl Organic Liquied Storage Tanks** Temporary source: _Yes **X** No

Manufacturer **Unknown** Model No. **Unknown**

Serial No. **Unknown** Installation date ____/____/_____

Articles being coated or degreased **Not Applicable**

Application method **Not Applicable**

Overspray (surface coating) (%) **N/A** Drying method **N/A**

No. of dryers **N/A** Tank capacity (degreasers) (gal) **12 – 400 bbl**

C. Associated Air Pollution Control Equipment

Emissions unit ID **COM1 & COM2** Device Type **Enclosed Smokeless Combustor**

Manufacturer **Cimarron Energy** Model No **Unknown**

Serial No. **Unknown** Installation date ____/____/_____

Control efficiency (%) **98%**.___ Capture efficiency (%) _____.___

Air pollutant(s) controlled **VOCs & HAPs** Efficiency estimation method **Vendor**

D. Ambient Impact Assessment NOT APPLICABLE

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) _____._____ Inside stack diameter (ft) _____._____

Stack temp (F) _____._____ Design stack flow rate (ACFM) _____._____

Actual stack flow rate (ACFM) _____ Velocity (ft/sec) _____._____

E. VOC-containing Substance Data

List each VOC-containing substance consumed, processed or produced at the emissions unit that is emitted into the air. In the name column, if providing a brand name, include the name of the manufacture; if the substance contains HAP, list the constituent HAP.

Substance Name (Chemical, Brand Name)	CAS No.	Substance Type	Actual Usage (gal/yr)	Max Usage (gal/day)	Max Usage (gal/year)	Emission Factor lb/bbl [1]
Crude Oil (VOC)		**Organic liquid**				**0.42388 lb/bbl**

[1] **Condensate tank storage throughput capacities are based on a throughput of 3,900 bbl/day. VOC and HAP emission estimates are performed using Bryan Research & Engineering, Inc. ProMax™ 3.2 simulation software program. The resulting VOC uncontrolled emission factor is 0.42388 lb VOC/bbl.**

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

EMISSIONS UNIT DESCRIPTION FOR VOC EMITTING SOURCES (EUD-2)

A. General Information

Emissions unit ID **VRT** Description **(2) Vapor Recovery Towers**

SIC Code (4-digit) **1311** SCC Code _____

B. Emissions Unit Description

Equipment type **(2) VRT Process Vessels** Temporary source: _Yes **X** No

Manufacturer **Unknown** Model No. **Unknown**

Serial No. **Unknown** Installation date____/____/_____

Articles being coated or degreased **Not Applicable**

Application method **Not Applicable**

Overspray (surface coating) (%) **N/A** Drying method **N/A**

No. of dryers **N/A** Tank capacity (degreasers) (gal) **N/A**

C. Associated Air Pollution Control Equipment

Emissions unit ID **COM1 & COM2** Device Type **Enclosed Smokeless Combustor**

Manufacturer **Cimarron Energy** Model No **Unknown**

Serial No. **Unknown** Installation date ____/____/_____

Control efficiency (%) **98%**.___ Capture efficiency (%) _____.___

Air pollutant(s) controlled **VOCs & HAPs** Efficiency estimation method **Vendor**

D. Ambient Impact Assessment NOT APPLICABLE

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) _____._____ Inside stack diameter (ft) _____._____

Stack temp (F) _____._____ Design stack flow rate (ACFM) _____._____

Actual stack flow rate (ACFM) _____ Velocity (ft/sec) _____._____

E. VOC-containing Substance Data

List each VOC-containing substance consumed, processed or produced at the emissions unit that is emitted into the air. In the name column, if providing a brand name, include the name of the manufacture; if the substance contains HAP, list the constituent HAP.

Substance Name (Chemical, Brand Name)	CAS No.	Substance Type	Actual Usage (gal/yr)	Max Usage (gal/day)	Max Usage (gal/year)	Emission Factor lb/bbl [1]
Crude Oil (VOC)		**Organic liquid**				**4.9015 lb/bbl**

[1] **Vapor Recovery Tower Vessel throughput capacities are based on a throughput of 3,900 bbl/day. VOC and HAP emission estimates are performed using Bryan Research & Engineering, Inc. ProMax™ 3.2 simulation software program. The resulting VOC uncontrolled emission factor is 4.9015 lb VOC/bbl.**

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

EMISSIONS UNIT DESCRIPTION FOR VOC EMITTING SOURCES (EUD-2)

A. General Information

Emissions unit ID **PW1 - PW4** Description **4 Produced Water Storage Tanks**

SIC Code (4-digit) **1311** SCC Code **31000132**

B. Emissions Unit Description

Equipment type **3 - 400 bbl Organic Liquid Storage Tanks** Temporary source: __Yes **X** No

Manufacturer **Unknown** Model No. **Unknown**

Serial No. **Unknown** Installation date___/____/___

Articles being coated or degreased **Not Applicable**

Application method **Not Applicable**

Overspray (surface coating) (%) **N/A** Drying method **N/A**

No. of dryers **N/A** Tank capacity (degreasers) (gal) **400 bbl each**

C. Associated Air Pollution Control Equipment

Emissions unit ID **COM** Device Type **Enclosed Smokeless Combustor**

Manufacturer **Cimarron Energy** Model No **Unknown**

Serial No. **Unknown** Installation date ____/____/_____

Control efficiency (%) **98%**.___ Capture efficiency (%) _____.___

Air pollutant(s) controlled **VOCs & HAPs** Efficiency estimation method **Vendor**

D. Ambient Impact Assessment NOT APPLICABLE

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) _____._____ Inside stack diameter (ft) _____._____

Stack temp (F) _____._____ Design stack flow rate (ACFM) _____.____

Actual stack flow rate (ACFM) _____ Velocity (ft/sec) _____._____

E. VOC-containing Substance Data

List each VOC-containing substance consumed, processed or produced at the emissions unit that is emitted into the air. In the name column, if providing a brand name, include the name of the manufacture; if the substance contains HAP, list the constituent HAP.

Substance Name (Chemical, Brand Name)	CAS No.	Substance Type	Actual Usage (gal/yr)	Max Usage (gal/day)	Max Usage (gal/year)	Emission Factor lb/bbl [1]
Produce Water (< 1% VOC content)						**0.262 lb/bbl**
Benzene	**71432**					**0.007 lb/bbl**
n-Hexane	**110543**					**0.022 lb/bbl**

[1] **Produced water tank storage throughput capacities are based on a throughput of 1,900 bbl/day. VOC and HAP emission estimates are performed using Colorado Department of Public Health & Environment emission factors for uncontrolled produced water tanks.**

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR FUEL COMBUSTION SOURCES (EUD-1)

A. General Information

Emissions unit ID **FL-1 to FL-3** Description **Natural Gas Flare**

SIC Code (4-digit) **1311** SCC Code **31000215**

B. Emissions Unit Description

Primary use **Natual Gas Flaring** Temporary Source **X** Yes ___No

Manufacturer **Zeeco** Model No. **Custom**

Serial Number _____ Installation Date____/____/_____

Boiler Type: ___ Industrial boiler ___ Process burner ___ Electric utility boiler

Other (describe) **Candlestick Flare**

Boiler horsepower rating_____ Boiler steam flow (lb/hr)_____

Type of Fuel-Burning Equipment (coal burning only):

___ Hand fired ___Spreader stoker ___Underfeed stoker ___Overfeed stoker

___ Traveling grate ___Shaking grate ___Pulverized, wet bed ___ Pulverized, dry bed

Actual Heat Input **75.50** MM BTU/hr Max. Design Heat Input **550.00** MM BTU/hr

C. Fuel Data

Primary fuel type(s) **Casing Gas** Standby fuel type(s)_____

Describe each fuel you expected to use during the term of the permit.

Fuel Type	Max. Sulfur Content (%)	Max. Ash Content (%)	BTU Value (cf, gal., or lb.)
Casing Gas	**5 ppm H_2S**		

D. Fuel Usage Rates

Fuel Type	Annual Actual Usage	Maximum Usage	
		Hourly	Annual
Casing Gas	**420.2 MMscf/yr**	**348,700 scf/hr**	**420.2 MMscf/yr**

E. Associated Air Pollution Control Equipment

Emissions unit ID **FL-1, FL-2, FL-3** Device type Flare

Air pollutant(s) Controlled **VOC** Manufacturer **Zeeco**

Model No. **Custom** Serial No. **Unknown**

Installation date **2012** Control efficiency (%) **98**

Efficiency estimation method **Manufacturer**

F. Ambient Impact Assessment – NOT APPLICABLE

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (this is not common).

Stack height (ft) _____.____ Inside stack diameter (ft) _____.____

Stack temp(°F) _____.____ Design stack flow rate (ACFM) _____.____

Actual stack flow rate (ACFM) _____.____ Velocity (ft/sec) _____.____

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)

A. General Information

Emissions unit ID **TLO** Description **Truck loading operations**

SIC Code (4-digit) **1311** SCC Code **31000199**

B. Emissions Unit Description

Primary use or equipment type **Transfer from tanks to trucks for haul offsite**

Manufacturer **Not Applicable** Model No. **Not Applicable**

Serial No. **Not Applicable** Installation date ____/____/____

Raw materials **Not Applicable**

Finished products **Condensate**

Temporary source: **X** No ___Yes

C. Activity or Production Rates

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	**N/A**	**3900 bb/day**
Maximum rate	**N/A**	**3900 bbl/day**

D. Associated Air Pollution Control Equipment – NOT APPLICABLE

Emissions unit ID _____ Device Type _____

Manufacturer _____ Model No _____

Serial No. _____ Installation date ____/____/_____

Control efficiency (%) Capture efficiency (%) _____.___

Air pollutant(s) controlled _____ Efficiency estimation method _____

E. Ambient Impact Assessment NOT APPLICABLE

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft) _____._____ Inside stack diameter (ft) _____._____

Stack temp (F) _____._____ Design stack flow rate (ACFM) _____._____

Actual stack flow rate (ACFM) _____._____ Velocity (ft/sec) _____._____

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

EMISSION UNIT DESCRIPTION FOR PROCESS SOURCES (EUD-3)

A. General Information

Emissions unit ID **FUG** Description **Fugitive Emissions from Component Leaks**

SIC Code (4-digit) **1311** SCC Code **310888811**

B. Emissions Unit Description

Primary use or equipment type **valves, flanges, pump seals, connectors, etc.**

Manufacturer **Not Applicable** Model No. **Not Applicable**

Serial No. **Not Applicable** Installation date ____/____/____

Raw materials **Not Applicable**

Finished products **Condensate, Produced Water, Pipeline Quality Gas**

Temporary source: **X** No ___Yes

C. Activity or Production Rates

Activity or Production Rate	Amount/Hour	Amount/Year
Actual Rate	**N/A**	**N/A**
Maximum rate	**N/A**	**N/A**

D. Associated Air Pollution Control Equipment – NOT APPLICABLE

Emissions unit ID _____ Device Type _____

Manufacturer _____ Model No _____

Serial No. _____ Installation date ____/____/____

Control efficiency (%) Capture efficiency (%) _____.___

Air pollutant(s) controlled _____ Efficiency estimation method _____

E. Ambient Impact Assessment NOT APPLICABLE

This information must be completed by temporary sources or when ambient impact assessment is an applicable requirement for this emissions unit (This is not common)).

Stack height (ft) _____._____ Inside stack diameter (ft) _____._____

Stack temp (F) _____._____ Design stack flow rate (ACFM) _____._____

Actual stack flow rate (ACFM) _____._____ Velocity (ft/sec) _____._____

EPA Form 5900-83 – Insignificant Emissions

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

INSIGNIFICANT EMISSIONS (IE)

On this page list each insignificant activity or emission unit. In the "number" column, indicate the number of units in this category. Descriptions should be brief but unique. Indicate which emissions criterion of part 71 is the basis for the exemption.

Number	Description of Activities or Emissions Units	RAP, except HAP	HAP
(2) – GT1 & GT2	**Two (2) 0.75 MMBtu/hr Group Treater burners**	**X**	**X**
(2) – COM	**Two (2) Enclosed Smokeless Cimarron ECD-HV 48"X12' ECD, continuous pilot, natural draft, auto ignite combustor (COM)**	**X**	

EPA Forms 5900-84 – Emissions Calculations

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

EMISSION CALCULATIONS (EMISS)

Calculate potential to emit (PTE) for applicability purposes and actual emissions for fee purposes for each emissions unit, control device, or alternative operating scenario identified in section I of form **GIS**. If form **FEE** does not need to be submitted with the application, do not calculate actual emissions.

A. Emissions Unit ID West Clark Central Production Facility

B. Identification and Quantification of Emissions

First, list each air pollutant that is either regulated at the unit or present in major amounts, then list any other regulated pollutant (for fee calculation) not already listed. HAP may be simply listed as "HAP." Next, calculate PTE for applicability purposes and actual emissions for fee purposes for each pollutant. Do not calculate PTE for air pollutants listed solely for fee purposes. Include all fugitives for fee purposes. You may round to the nearest tenth of a ton for yearly values or tenth of a pound for hourly values.

Air Pollutants	Emission Rates			CAS No.
	Actual Annual Emissions (tons/yr)	Potential to Emit		
		Hourly (lb/hr)	Annual (tons/yr)	
VOC	**234.7**	**53.59**	**234.7**	
NO_x	**38.6**	**8.82**	**38.6**	
SO_2	**0.2**	**0.05**	**0.2**	
CO_2e	**45,309.2**	**10,344.6**	**45,309.2**	
HAP	**12.5**	**2.86**	**12.5**	
PM	**6.7**	**1.53**	**6.7**	
CO	**126.5**	**28.88**	**126.5**	

EPA Form 5900-03 – Fee Calculation Worksheet

EPA United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

FEE CALCULATION WORKSHEET (FEE)

Use this form initially, or thereafter on an annual basis, to calculate part 71 fees.

A. General Information

Type of fee (Check one): _X_ Initial ___ Annual

Deadline for submitting fee calculation worksheet **10 / 07 / 2013**

For initial fees, emissions are based on (Check one):

___ Actual emissions for the preceding calendar year. (Required in most circumstances.)

_X_ Estimates of actual emissions for the current calendar year. (Required when operations commenced during the preceding calendar year.)

Date commenced operations **10 / 07 / 2012**

___ Estimates of actual emissions for the preceding calendar year. (Optional after a part 71 permit was issued to replace a part 70 permit, but only if initial fee payment is due between January 1 and March 31; otherwise use actual emissions for the preceding calendar year.)

For annual fee payment, you are required to use actual emissions for the preceding calendar year.

B. Source Information: Complete this section only if you are paying fees but not applying for a permit.

Source or facility name **Not Applicable**

Mailing address: Street or P.O. Box

_____

City_____ State_____ ZIP_____ - _____

Contact person_____ Title_____

Telephone (_____) _____ - _____ Ext_____ Part 71 permit no.

_____

C. Certification of Truth, Accuracy and Completeness: Only needed if not submitting a separate form CTAC.

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in this submittal (form and attachments) are true, accurate and complete.

Name (signed) **SEE CERT Form CTAC**

Name (typed) _____ Date:____ /____ /_____

D. Annual Emissions Report for Fee Calculation Purposes -- Non-HAP

You may use this to report actual emissions (tons per year) of regulated pollutants (for fee calculation) on a calendar-year basis for both initial and annual fee calculation purposes. Section E is designed to report HAP emissions. Quantify all actual emissions, including fugitives, but do not include insignificant emissions and certain regulated air pollutants that are not counted for fee purposes, such as CO (see instructions). You may round to the nearest tenth of a ton on this form. Sum the emissions in each column and enter a subtotal at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000 for that column.

This data is for **2012/2013** (year)

Emission Unit ID	NO_x	VOC	SO_2	PM_{10}	Lead	Other
TK1 to TK12	0.0	6.0	0.0	0.0	0.0	
VRT	14.6	69.8	0.0	1.1	0.0	
PW1 to PW4	0.0	1.82	0.0	0.0	0.0	
FL1 to FL3	22.5	129.0	0.2	5.6	0.0	
TLO	0.0	20.1	0.0	0.0	0.0	
FUG	0.0	8.0	0.0	0.0	0.0	
SUBTOTALS	37.1	234.7	0.2	6.7	0.0	0.0

E. Annual Emissions Report for Fee Calculation Purposes -- HAP

HAP Identification. Identify individual HAP emitted at the facility, identify the CAS number, and assign a unique identifier for use in the second table in this section. Whenever assigning identifier codes, use "HAP1" for the first, "HAP2" for the second, and so on.

Name of HAP	CAS No	Identifier
Benzene	**71432**	**HAP1**
Toluene	**108883**	**HAP2**
Ethlybenzene	**100414**	**HAP3**
Xylenes	**1330207**	**HAP4**
n-Hexane	**110543**	**HAP5**

HAP Emissions. Report the actual emissions of individual HAP identified above. Use the identifiers assigned in the table above. Include all emissions, including fugitives, and do not include insignificant emissions. You may round to the nearest tenth of a ton. Sum the emissions in each column and enter a subtotal at the bottom of the page. If any subtotal exceeds 4,000 tons, enter 4,000.

This data is for **2012** (year)

Emissions Unit ID	Actual Emissions (Tons/Year)									
	HAP1	**HAP2**	**HAP3**	**HAP4**	**HAP5**	**HAP6**	**HAP7**	**HAP8**	**HAP9**	**HAP10**
TK1 to TK12	0.02	0.025	0.005	0.01	0.15					
VRT	0.19	0.31	0.07	0.11	1.77					
PW1 to PW4	0.05				0.15					
FL1 to FL3	1.72	1.54	0.02	0.12	4.59					
TLO	0.03	0.21	0.09	0.20	0.34					
FUG	0.04	0.08	0.02	0.04	0.17					
SUBTOTALS	**2.05**	**1.83**	**0.13**	**0.36**	**7.17**	**0**	**0**	**0**	**0**	**0**

F. Fee Calculation Worksheet

This section is used to calculate the total fee owed for both initial and annual fee payment purposes. Reconciliation is only for cases where you are paying the annual fee and you used any type of estimate of actual emissions when you calculated the initial fee. If you do not need to reconcile fees, only complete line 1-5 and then skip down to lines 21 – 26. See instructions for more detailed explanation.

1. Sum the emissions from section D of this form (non-HAP) and enter the total (tons).	**278.7 tpy**
2. Sum the emissions from section E of this form (HAP) and enter the total (tons).	**11.5 tpy**
3. Sum lines 1 and 2.	**290.2 tpy**
4. Enter the emissions that were counted twice. If none, enter "0."	**11.5 tpy**
5. Subtract line 4 from line 3, round to the nearest ton, and enter the result here.	**278.7 tpy**

RECONCILIATION
(WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "CURRENT" CALENDAR YEAR)

Only complete lines 6-10 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year in which you paid initial fees; otherwise skip to line 11 or to line 21.

6. Enter the total estimated actual emissions for the year the initial fee was paid (previously reported on line 5 of the initial fee form).
7. If line 5 is greater than line 6, subtract line 6 from line 5, and enter the result. Otherwise enter "0."
8. If line 6 is greater than line 5, subtract line 5 from line 6, and enter the result. Otherwise enter "0."
9. If line 7 is greater than 0, multiply line 7 by last year's fee rate ($/ton) and enter the result here. This is the underpayment. Go to line 21.
10. If line 8 is greater than 0, multiply line 8 by last year's fee rate ($/ton) and enter the result here. This is the overpayment. Go to line 21.

RECONCILIATION
(WHEN INITIAL FEES WERE BASED ON ESTIMATES FOR THE "PRECEDING" CALENDAR YEAR)

Only complete lines 11-20 if you are paying the first annual fee and initial fees were based on estimated actual emissions for the calendar year preceding initial fee payment; otherwise skip to line 21. If completing this section, you will also need to complete sections D and E to report actual emissions for the calendar year preceding initial fee payment.

11. Sum the actual emissions from section D (non-HAP) for the calendar year preceding initial fee payment and enter the result here.
12. Sum the actual emissions from section E (HAP) for the calendar year preceding initial fee payment and enter the result here.
13. Add lines 11 and 12 and enter the total here. These are total actual emissions for the calendar year preceding initial fee payment.
14. Enter double counted emission from line 13 here. If none, enter "0."
15. Subtract line 14 from line 13, round to the nearest ton, and enter the result here.
16. Enter the total estimated actual emissions previously reported on line 5 of the initial fee form. These are estimated actual emissions for the calendar year preceding initial fee payment.

17. If line 15 is greater than line 16, subtract line 16 from line 15, and enter the result here. Otherwise enter "0."	
18. If line 16 is greater than line 15, subtract line 15 from line 16, and enter the result here. Otherwise enter "0."	
19. If line 17 is greater than 0, multiply line 17 by last year's fee rate ($/ton) and enter the result here. This is the underpayment.	
20. If line 18 is greater than 0, multiply line 18 by last year's fee rate ($/ton) and enter the result on this line. This is the overpayment.	

FEE CALCULATION

21. Multiply line 5 (tons) by the current fee rate (**$48.33/ton**) and enter the result here.	**($48.33) * (278.7 tpy) = $13,469.57**
22. Enter any underpayment from line 9 or 19 here. Otherwise enter "0."	**$0**
23. Enter any overpayment from line 10 or 20 here. Otherwise enter "0."	**$0**
24. If line 22 is greater than "0," add it to line 21 and enter the result here. If line 23 is greater than "0," subtract this from line 21 and enter the result here. Otherwise enter the amount on line 21 here. This is the fee adjusted for reconciliation.	**$13,469.57**
25. If your account was credited for fee assessment error since the last time you paid fees, enter the amount of the credit here. Otherwise enter "0."	**$0**
26. Subtract line 25 from line 24 and enter the result here. Stop here. This is the total fee amount that you must remit to EPA.	**$13,469.57**

EPA Form 5900-06 – Fee Filing Form

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

FEE FILING FORM (FF)

Complete this form each time you prepare form **FEE** and send this form to the appropriate lockbox bank address, along with full payment. This form required at time of initial fee payment, and thereafter, when paying annual fees.

Source or Facility Name **EOG Resources, Inc. – West Clark Central Production Facility**

Source Location **Fort Berthold, NE/NE Sec 24, T151N, R95W; McKenzie County, ND**

EPA Region where Source Located **EPA Region VIII**

Mailing Address:

Street/P.O. Box **600 17th Street, Suite 1000N** City **Denver**

State **Colorado** ZIP **80202** - _____

Contact Person: **Curtis Rice** Title **Senior Environmental Specialist**

Telephone (**303**) **262** - **9946** Ext. _____

Total Fee Payment Remitted: **$13,469.57**

EPA Form 5900-86 – Initial Compliance Plan & Compliance Certification

United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 06/30/2015

Federal Operating Permit Program (40 CFR Part 71)

INITIAL COMPLIANCE PLAN AND COMPLIANCE CERTIFICATION (I-COMP)

SECTION A - COMPLIANCE STATUS AND COMPLIANCE PLAN

Complete this section for each unique combination of applicable requirements and emissions units at the facility. List all compliance methods (monitoring, recordkeeping and reporting) you used to determine compliance with the applicable requirement described above. Indicate your compliance status at this time for this requirement and compliance methods and check "YES" or "NO" to the follow-up question.

Emission Unit ID(s): **All at West Clark Central Production Facility**

Applicable Requirement (Describe and Cite)

TRIBAL NSR, PART 71, NSPS OOOO

Compliance Methods for the Above (Description and Citation):

MONITORING AND RECORDKEEPING

Compliance Status:

_X_ In Compliance: Will you continue to comply up to permit issuance? _X_ Yes
____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes ____No

Emission Unit ID(s):

Applicable Requirement (Description and Citation):

Compliance Methods for the Above (Description and Citation):

Compliance Status:

___ In Compliance: Will you continue to comply up to permit issuance? ____Yes ____No

___ Not In Compliance: Will you be in compliance at permit issuance? ___Yes ___No

___ Future-Effective Requirement: Do you expect to meet this on a timely basis? ____Yes ____No

B. SCHEDULE OF COMPLIANCE

Complete this section if you answered "NO" to any of the questions in section A. Also complete this section if required to submit a schedule of compliance by an applicable requirement. Please attach copies of any judicial consent decrees or administrative orders for this requirement.

Unit(s)_____ Requirement_____

Reason for Noncompliance. Briefly explain reason for noncompliance at time of permit issuance or that future-effective requirement will not be met on a timely basis:

Narrative Description of how Source Compliance Will be Achieved. Briefly explain your plan for achieving compliance:

Schedule of Compliance. Provide a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance, including a date for final compliance.

Remedial Measure or Action	Date to be Achieved

C. SCHEDULE FOR SUBMISSION OF PROGRESS REPORTS

Only complete this section if you are required to submit one or more schedules of compliance in section B or if an applicable requirement requires submittal of a progress report. If a schedule of compliance is required, your progress report should start within 6 months of application submittal and subsequently, no less than every six months. One progress report may include information on multiple schedules of compliance.

Contents of Progress Report (describe):

First Report____/____/___ Frequency of Submittal_____

D. SCHEDULE FOR SUBMISSION OF COMPLIANCE CERTIFICATIONS

This section must be completed once by every source. Indicate when you would prefer to submit compliance certifications during the term of your permit (at least once per year).

Frequency of submittal **ANNUAL** Beginning **10 / 1 / 2014**

E. COMPLIANCE WITH ENHANCED MONITORING & COMPLIANCE CERTIFICATION REQUIREMENTS

This section must be completed once by every source. To certify compliance with these, you must be able to certify compliance for every applicable requirement related to monitoring and compliance certification at every unit.

Enhanced Monitoring Requirements: **N/A** In Compliance ____ Not In Compliance

Compliance Certification Requirements: **N/A** In Compliance ____ Not In Compliance

EPA Form 5900-02 – Certification of Truth, Accuracy, & Completeness

EPA United States Environmental Protection Agency

OMB No. 2060-0336, Approval Expires 6/30/2015

Federal Operating Permit Program (40 CFR Part 71)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS (CTAC)

This form must be completed, signed by the "Responsible Official" designated for the facility or emission unit, and sent with each submission of documents (i.e., application forms, updates to applications, reports, or any information required by a part 71 permit).

A. Responsible Official

Name: (Last) **Schaefer** (First) **James** (MI) ____

Title **Operations Manager**

Street or P.O. Box **600 17th Street, Suite 1000N**

City **Denver** State **Colorado** ZIP **80202** - ____

Telephone (**303**) **262-9946** Ext. ____ Facsimile (**303**) **262-9949**

B. Certification of Truth, Accuracy and Completeness (to be signed by the responsible official)

I certify under penalty of law, based on information and belief formed after reasonable inquiry, the statements and information contained in these documents are true, accurate and complete.

Name (signed) _____

Name (typed) **James Schaefer** Date: 9 / 27 / 2013

Appendix B

Detailed Emissions Calculations and Supporting Documentation

Table B-1 EOG Resources, Inc. - West Clark Central Production Facility
Estimated Potential Criteria & HAP Pollutant Emissions per Source

ID	Emission Unit	Annual Emission Rates - Controlled						Annual HAPs - Controlled										Total HAP
		NO_x	CO	VOC	SO_2	PM_{10}	$PM_{2.5}$	BZ	Tol	EB	Xyl	HCHO	Acetal	Acro	N-Hex	Meth	224-TMP	
1	Crude/Condensate Tanks			6.0 tpy				30.6 lb/yr	49.8 lb/yr	10.6 lb/yr	18.2 lb/yr	--	--	--	302.2 lb/yr	--	24.3 lb/yr	0.22 tpy
2	Produced Water Tank			1.82 tpy				97.1 lb/yr	--	--	--	--	--	--	305.1 lb/yr	--	--	0.20 tpy
3	Enclosed Tank Combustor [3]	1.2 tpy	0.3 tpy		0.002 tpy	0.08 tpy	0.08 tpy	--	--	--	--	--	--	--	--	--	--	0.00 tpy
	VRT [4]	14.6 tpy	3.6 tpy	69.8 tpy	0.023 tpy	1.07 tpy	1.07 tpy	375.3 lb/yr	615.1 lb/yr	132.3 lb/yr	226.8 lb/yr	--	--	--	3,538.9 lb/yr	--	288.2 lb/yr	2.59 tpy
4	Temporary Flare	22.5 tpy	122.4 tpy	129.0 tpy	0.178 tpy	5.56 tpy	5.56 tpy	3,440 lb/yr	3,089 lb/yr	47 lb/yr	238 lb/yr	--	--	--	9,184 lb/yr	--	382 lb/yr	8.19 tpy
5	Truck Loading			20.1 tpy				70.4 lb/yr	413.3 lb/yr	187.6 lb/yr	396.8 lb/yr	--	--	--	684.6 lb/yr	--	162.6 lb/yr	0.96 tpy
6	Group Treater 1	0.20 tpy	0.08 tpy	0.01 tpy	0.002 tpy	0.02 tpy	0.02 tpy											0.01 tpy
7	Group Treater 2	0.20 tpy	0.08 tpy	0.01 tpy	0.002 tpy	0.02 tpy	0.02 tpy											
8	Fugitive Components			8.0 tpy				90.3 lb/yr	155.1 lb/yr	40.6 lb/yr	89.0 lb/yr	--	--	--	346.1 lb/yr	--	--	0.36 tpy
	Totals	**38.6 tpy**	**126.5 tpy**	**234.7 tpy**	**0.2 tpy**	**6.7 tpy**	**6.7 tpy**	**4,104 lb/yr**	**4,322 lb/yr**	**418 lb/yr**	**969 lb/yr**	**0 lb/yr**	**0 lb/yr**	**0 lb/yr**	**14,361 lb/yr**	**0 lb/yr**	**858 lb/yr**	**12.5 tpy**
	Totals w/o Fugitive Components	**38.6 tpy**	**126.5 tpy**	**226.7 tpy**	**0.2 tpy**	**6.7 tpy**	**6.7 tpy**	**4,013 lb/yr**	**4,167 lb/yr**	**378 lb/yr**	**880 lb/yr**	**0 lb/yr**	**0 lb/yr**	**0 lb/yr**	**14,015 lb/yr**	**0 lb/yr**	**858 lb/yr**	**12.2 tpy**

[3] The VOC and HAP emissions from the Enclosed Tank Combustor are accounted for in the crude oil and produced water tanks.

[4] The majority of the flashing occurs in the VRT and the vapors are sent to pipeline via VRU. In the event the VRU is not operational the VRT vapors are routed to the enclosed smokeless combustor that has a vendor guaranteed destruction efficiency of 98% or higher. For conservatism, emissions from the VRT were calculated assuming the VRU was not operational and the vapors are sent to the enclosed combustor 100% of the time. VRT emissions are presented separate from tank emissions and include combustion emissions from the enclosed combustor.

Table B-2 EOG Resources, Inc. - West Clark Central Production Facility
Enclosed Combustor Emission Calculations
Enclosed Combustor (COM) for Crude Oil Tanks

Emission Source:	Crude Oil Tanks
Source Type:	Combustor
Heat Input:	1.89 MMBtu/hr
Tank Vent Gas Flowrate:	689.8 scf/hr
Tank Vent Gas Flowrate:	6.04 MMscf/yr
Pilot Gas Flowrate:	12.0 scf/hr
Pilot Gas Flowrate:	0.11 MMscf/yr
Total Flowrate to Combustor Including Pilot:	6.15 MMscf/yr
Estimated HHV:	2,699 Btu/scf
Total VOC Destruction Efficiency:	98%
Sulfur Content of Fuel:	0.0020 gr/scf
Operating Hours per Year:	8,760 hr/yr

Pollutant	Emission Factors [a]	Emissions - Controlled lb/hr [b], [c]	Emissions - Controlled tpy [d]
NO_x	0.140 lb/MMBtu	0.27	1.16
CO	0.035 lb/MMBtu	0.07	0.29
VOC	301.7 tpy uncontrolled [e]	1.38	6.03
SO_2	0.00021 lb/MMBtu	0.0004	0.0018
PM_{10}	40.0 µg / ℓ	0.019	0.0813
$PM_{2.5}$	40.0 µg / ℓ	0.019	0.0813
Benzene	0.76 tpy uncontrolled [e]	0.0035	0.0153
Toluene	1.25 tpy uncontrolled [e]	0.0057	0.0249
Ethylbenzene	0.27 tpy uncontrolled [e]	0.0012	0.0053
Xylenes	0.45 tpy uncontrolled [e]	0.0021	0.0091
n-Hexane	7.55 tpy uncontrolled [e]	0.0345	0.1511
224-TMP	0.61 tpy uncontrolled [e]	0.0028	0.0121
Total HAPs	10.89 tpy uncontrolled	0.0497	0.2178

Notes:

(a) NO_x & CO Emission factors are from WDEQ O&G Guidance. SO_2 & PM_{10} EFs are from AP-42 Tables 13.5-1 & 2 (Industrial Flares)

40 µg / L is for lightly smoking flare (this is conservative as this unit is smokeless in design).

SO_2 emissions based on AP42, which is based on 100% conversion of sulfur to SO_2 at 2000 grains/MMscf.

(b) Hourly Emission Rate (lb/hr) except for PM_{10} = (Emission Factor, lb/MMBtuf) * (Heat Input, MMBtu/hr)

(c) (MMscf CH_4) (10.6 scf E/scf CH_4) (0.0283 m^3/scf E) (40 µ PM_{10}/L E) (1000 l/m^3) (g/106 µg) (lb/453.59 g) / (hr/yr) = lb PM_{10}/ hr

(d) Annual Emission Rate (tpy) = (Hourly Emission Rate, lb/hr) * (hr/yr) / (2,000 lb/ton)

(e) For VOC & HAP there are no emission factors used, instead uncontrolled emissions are taken directly from Bryan Research & Engineering, Inc. ProMax™ 3.2 simulation software program. Controlled emissions are based on 98% control efficiency for enclosed vapor combustor (COM).

From the 3-phase separator, liquids are sent to a Vapor Recovery Tower (VRT) where the majority of the flashing occurs and the vapors are sent to pipeline via VRU. The liquids from the VRT are then sent to the tanks where the pressure differential is about 2 psia and a little flashing occurs along with working and breathing losses. These vapors from the tanks are captured via a vapor recovery unit (VRU) and routed to the sales gathering pipeline. In the event the VRU is not operational the tank vapors are routed to the enclosed smokeless combustor that has a vendor guaranteed destruction efficiency of 98% or higher. For conservatism, emissions from the tanks were calculated assuming the VRU was not operational and the vapors are sent to the enclosed combustor 100% of the time.

(tpy uncontrolled) * (100-95%) / (100) = tpy controlled (tpy controlled) (2000 lb/ton) / (8760 hr/yr) = lb/hr controlled

Table B-3 EOG Resources, Inc. - West Clark Central Production Facility
Vapor Recovery Tower Emissions Controlled by Enclosed Combustor (COM)

Emission Source:	VRT with Enclosed Combustor
Source Type:	Process Vessel
Heat Input:	23.77 MMBtu/hr
Tank Vent Gas Flowrate:	9,220.4 scf/hr
Tank Vent Gas Flowrate:	80.77 MMscf/yr
Pilot Gas Flowrate:	12.0 scf/hr
Pilot Gas Flowrate:	0.11 MMscf/yr
Total Flowrate to Combustor Including Pilot:	80.88 MMscf/yr
Estimated HHV:	2,574 Btu/scf
Total VOC Destruction Efficiency:	98%
Sulfur Content of Fuel:	0.0020 gr/scf
Operating Hours per Year:	8,760 hr/yr

Pollutant	Emission Factors [a]	Emissions - Controlled	
		lb/hr [b], [c]	tpy [d]
NO_x	0.140 lb/MMBtu	3.33	14.57
CO	0.035 lb/MMBtu	0.83	3.64
VOC	3,488.7 tpy uncontrolled [e]	15.93	69.77
SO_2	0.00022 lb/MMBtu	0.0053	0.0231
PM_{10}	40.0 µg / ℓ	0.244	1.0697
$PM_{2.5}$	40.0 µg / ℓ	0.244	1.0697
CO_2	0.97 lb/hr	0.9666	4.234
CH_4	24.21 lb/hr	0.4843	2.121
N_2O	0.00022 lb/MMBtu	0.0052	0.0229
Benzene	9.38 tpy uncontrolled [e]	0.0428	0.1876
Toluene	15.38 tpy uncontrolled [e]	0.0702	0.3075
Ethylbenzene	3.31 tpy uncontrolled [e]	0.0151	0.0661
Xylenes	5.67 tpy uncontrolled [e]	0.0259	0.1134
n-Hexane	88.47 tpy uncontrolled [e]	0.4040	1.7694
224-TMP	7.20 tpy uncontrolled [e]	0.0329	0.1441
Total HAPs	129.41 tpy uncontrolled	0.5909	2.5883

Notes:

(a) NO_x & CO Emission factors are from WDEQ O&G Guidance. SO_2 & PM_{10} EFs are from AP-42 Tables 13.5-1 & 2 (Industrial Flares)

40 µg / L is for lightly smoking flare (this is conservative as this unit is smokeless in design).

SO_2 emissions based on AP42, which is based on 100% conversion of sulfur to SO_2 at 2000 grains/MMscf.

(b) Hourly Emission Rate (lb/hr) except for PM_{10} = (Emission Factor, lb/MMBtuf) * (Heat Input, MMBtu/hr)

(c) (MMscf CH_4) (10.6 scf E/scf CH_4) (0.0283 m^3/scf E) (40 µ PM_{10}/L E) (1000 l/m^3) (g/106 µg) (lb/453.59 g) / (hr/yr) = lb PM_{10}/ hr

(d) Annual Emission Rate (tpy) = (Hourly Emission Rate, lb/hr) * (hr/yr) / (2,000 lb/ton)

(e) For VOC & HAP there are no emission factors used, instead uncontrolled emissions are taken directly from Bryan Research & Engineering, Inc. ProMax™ 3.2 simulation software program. Controlled emissions are based on 98% control efficiency for enclosed vapor combustor (COM).

From the 3-phase separator, liquids are sent to a Vapor Recovery Tower (VRT) where the majority of the flashing occurs and the vapors are sent to pipeline via VRU. In the event the VRU is not operational the VRT vapors are routed to the enclosed smokeless combustor that has a vendor guaranteed destruction efficiency of 98% or higher. For conservatism, emissions from the VRT were calculated assuming the VRU was not operational and the vapors are sent to the enclosed combustor 100% of the time.

(tpy uncontrolled) * (100-95%) / (100) = tpy controlled (tpy controlled) (2000 lb/ton) / (8760 hr/yr) = lb/hr controlled

Bryan Research & Engineering, Inc.

ProMax® 3.2

with

TSWEET & PROSIM

Simulation Report

Project: West Clark Emission's Estimate.pmx

Licensed to AECOM Inc. dba AECOM Environment

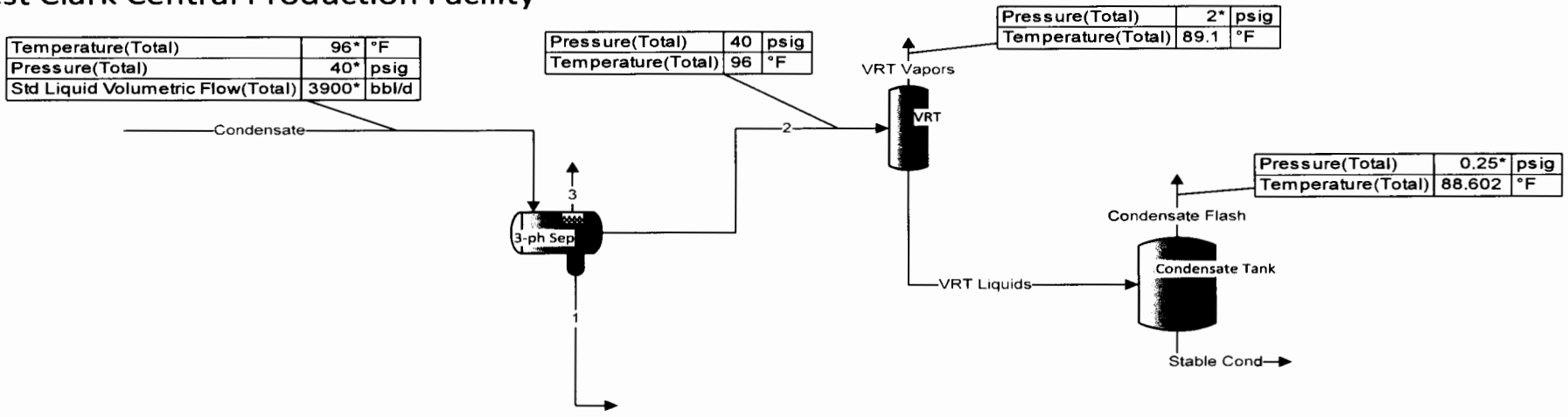
Client Name: EOG Resources
Location: West Clark Central Production Facility
Job: Condensate Tank Emissions Estimate

ProMax Filename: W:\EOG\North Dakota\West Clark CPF Title V\Promax\West Clark Emission's Estimate.pmx
ProMax Version: 3.2.13116.0
Simulation Initiated: 9/19/2013 4:13:21 PM

Bryan Research & Engineering, Inc.
Chemical Engineering Consultants
P.O. Box 4747 Bryan, Texas 77805
Office: (979) 776-5220
FAX: (979) 776-4818
mailto:sales@bre.com
http://www.bre.com/

Report Navigator can be activated via the ProMax Navigator Toolbar.
An asterisk (*), throughout the report, denotes a user specified value.
A question mark (?) after a value, throughout the report, denotes an extrapolated or approximate value.

EOG Resources
West Clark Central Production Facility



VOC Flash Emissions

Stream Condensate Flash C3+ Mass Flow =250.5 ton/yr

Condensate Tanks Uncontrolled Emissions Summary

250.5tpy VOC (flashing) + 51.17 tpy W&B = 301.7 tpy

Uncontrolled Emission Factor = 0.3921 lb/bbl

Tank loss calculations for "Stable Cond".
Total working and breathing losses from the Vertical Cylinder are 51.17 ton/yr.

*

Notes:
- Working&Breathing losses represent VOC-only components for condensate tanks, *all components for produced water tank
- Emissions are based on twelve (12) condensate tanks receiving equal volumes of throughput
- Maximum height of liquid is assumed to reach 90% (18ft) in tanks with an average height of 15ft

Process Streams		Condensate	Condensate Flash	Stable Cond	VRT Liquids	VRT Vapors	1	2	3
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Total**	**From Block:**	--	Condensate Tank	Condensate Tank	VRT	VRT	3-ph Sep	3-ph Sep	3-ph Sep
	To Block:	3-ph Sep	--	--	Condensate Tank	--	--	VRT	--
Mass Flow		lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h	lb/h
Carbon Dioxide		1.21793*	0.0540027	0.159075	0.213078	0.966609	0	1.17969	0.0382440
Nitrogen		3.42265*	0.0384644	0.00988880	0.0483532	2.50051	0	2.54886	0.873784
Methane		28.7490*	0.753658	0.533269	1.28693	24.2132	0	25.5002	3.24883
Ethane		228.280*	10.2791	40.5559	50.8350	172.079	0	222.914	5.36595
Propane		703.874*	23.7494	334.583	358.333	340.620	0	698.953	4.92107
i-Butane		212.765*	4.14146	150.927	155.068	57.1000	0	212.168	0.597127
n-Butane		883.625*	13.3900	685.131	698.521	183.318	0	881.839	1.78667
i-Pentane		552.439*	3.77994	496.957	500.737	51.2515	0	551.988	0.450554
n-Pentane		1000.61*	5.33525	922.385	927.720	72.2576	0	999.978	0.627049
Cyclopentane		0*	0	0	0	0	0	0	0
n-Hexane		865.012*	1.49386	843.146	844.640	20.1989	0	864.839	0.172609
Cyclohexane		0*	0	0	0	0	0	0	0
2,2-Dimethylbutane		824.926*	2.80184	783.914	786.716	37.8876	0	824.603	0.323008
n-Heptane		2167.29*	1.24301	2149.07	2150.31	16.8323	0	2167.14	0.147473
Methylcyclohexane		0*	0	0	0	0	0	0	0
2,2,4-Trimethylpentane		200.332*	0.121527	198.551	198.673	1.64495	0	200.318	0.0143326
Benzene		93.6655*	0.158468	91.3469	91.5054	2.14189	0	93.6473	0.0181703
Toluene		531.592*	0.259373	527.792	528.051	3.51066	0	531.562	0.0304880
Ethylbenzene		324.528*	0.0556795	323.711	323.766	0.755114	0	324.521	0.00676246
m-Xylene		657.058*	0.0954266	655.656	655.752	1.29471	0	657.046	0.0116693
n-Octane		2578.59*	0.480952	2571.52	2572.00	6.52675	0	2578.53	0.0590982
n-Nonane		1290.76*	0.0834298	1289.53	1289.62	1.13424	0	1290.75	0.0105713
C10+		29937.4*	0.00176887	29937.4	29937.4	0.0244475	0	29937.4	0.000292635
Water		0*	0	0	0	0	0	0	0
Property	**Units**								
Temperature	°F	96*	88.6022	88.6022	89.0997	89.0997	96	96	96
Pressure	psia	51.79*	12.04*	12.04	13.79	13.79*	51.79	51.79	51.79
Mole Fraction Vapor	%	0.200154	100	0	0	100		0	100
Mole Fraction Light Liquid	%	99.7998	0	100	100	0		100	0
Mole Fraction Heavy Liquid	%	0	0	0	0	0		0	0
Molecular Weight	lb/lbmol	146.349	47.6925	155.301	154.734	45.4423		146.579	31.7408
Mass Density	lb/ft^3	43.6850	0.0990408	47.3794	47.3425	0.108049		46.8025	0.282976
Molar Flow	lbmol/h	294.407	1.43244	270.461	271.894	21.9236	0	293.818	0.589266
Mass Flow	lb/h	43086.1	68.3167	42002.9	42071.2	996.259	0	43067.4	18.7038
Vapor Volumetric Flow	ft^3/h	986.291	689.783	886.522	888.655	9220.42		920.194	66.0967
Liquid Volumetric Flow	gpm	122.966	85.9990	110.527	110.793	1149.56		114.726	8.24063
Std Vapor Volumetric Flow	MMSCFD	2.68135	0.0130461	2.46326	2.47631	0.199672	0	2.67598	0.00536681
Std Liquid Volumetric Flow	sgpm	113.75*	0.265981	109.426	109.692	3.97061	0	113.663	0.0874117
Specific Gravity			1.64669	0.759662	0.759072	1.56900		0.750413	1.09592
API Gravity				51.7433	51.8268			53.0752	
Net Ideal Gas Heating Value	Btu/ft^3	7286.82	2486.48	7723.19	7695.60	2369.63		7298.20	1612.65
Net Liquid Heating Value	Btu/lb	18740.4	19628.2	18717.5	18719.0	19634.8		18740.2	19158.6
Gross Ideal Gas Heating Value	Btu/ft^3	7797.96	2699.42	8261.56	8232.26	2574.11		7810.07	1761.35
Gross Liquid Heating Value	Btu/lb	20065.8	21322.6	20033.1	20035.2	21342.3		20065.4	20936.5

Process Streams		Condensate	Condensate Flash	Stable Cond	VRT Liquids	VRT Vapors	1	2	3
Composition	**Status:**	Solved	Solved	Solved	Solved	Solved	Solved	Solved	Solved
Phase: **Vapor**	**From Block:**	--	Condensate Tank	Condensate Tank	VRT	VRT	3-ph Sep	3-ph Sep	3-ph Sep
	To Block:	3-ph Sep	--	--	Condensate Tank	--	--	VRT	--
Mole Fraction		%	%			%			%
Carbon Dioxide		0.147471	0.0856627			0.100183			0.147471
Nitrogen		5.29331	0.0958553			0.407147			5.29331
Methane		34.3673	3.27964			6.88446			34.3673
Ethane		30.2842	23.8648			26.1034			30.2842
Propane		18.9388	37.5994			35.2341			18.9388
i-Butane		1.74347	4.97433			4.48108			1.74347
n-Butane		5.21664	16.0828			14.3864			5.21664
i-Pentane		1.05976	3.65745			3.24015			1.05976
n-Pentane		1.47490	5.16237			4.56818			1.47490
Cyclopentane		0	0			0			0
n-Hexane		0.339915	1.21018			1.06914			0.339915
Cyclohexane		0	0			0			0
2,2-Dimethylbutane		0.636090	2.26978			2.00540			0.636090
n-Heptane		0.249761	0.866010			0.766222			0.249761
Methylcyclohexane		0	0			0			0
2,2,4-Trimethylpentane		0.0212931	0.0742712			0.0656850			0.0212931
Benzene		0.0394761	0.141627			0.125074			0.0394761
Toluene		0.0561535	0.196520			0.173795			0.0561535
Ethylbenzene		0.0108097	0.0366131			0.0324429			0.0108097
m-Xylene		0.0186532	0.0627496			0.0556263			0.0186532
n-Octane		0.0877988	0.293934			0.260622			0.0877988
n-Nonane		0.0139875	0.0454119			0.0403384			0.0139875
C10+		0.000226721	0.000563762			0.000509096			0.000226721

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Annual Emissions

Oil Tanks

Components	Working Losses (ton/yr)	Breathing Losses (ton/yr)	Total Losses (ton/yr)
Mixture	43.83	7.337	51.17
Propane	20.68	3.462	24.14
i-Butane	3.251	0.5443	3.796
n-Butane	10.01	1.676	11.69
i-Pentane	2.579	0.4318	3.011
n-Pentane	3.483	0.583	4.066
Cyclopentane	0	0	0
n-Hexane	0.866	0.145	1.011
Cyclohexane	0	0	0
2,2-Dimethylbutane	1.823	0.3051	2.128
n-Heptane	0.6245	0.1045	0.7291
Methylcyclohexane	0	0	0
2,2,4-Trimethylpentane	0.06391	0.0107	0.07461
Benzene	0.06047	0.01012	0.0706
Toluene	0.09403	0.01574	0.1098
Ethylbenzene	0.01879	0.003145	0.02193
m-Xylene	0.03105	0.005198	0.03625
n-Octane	0.2118	0.03546	0.2473
n-Nonane	0.03116	0.005215	0.03637
C10+	0.000273	4.57E-05	0.0003187

Table B-4 ***EOG Resources, Inc. - West Clark Central Production Facility***
Produced Water Tank Emission Calculations

Daily Throughput	1,900 bbls/day
Days Per Year	365 days/yr
Hours per Year	8,760 hr/yr

Pollutant	Emission Factor [1]	Uncontrolled Emissions			Add-On Control & Efficiency [2]		Controlled Emissions		
		lb/hr	lb/yr	tpy			lb/hr	lb/yr	tpy
VOC	0.262 lb/bbl	20.74	181,697.0	90.85	VCU	98%	0.41	3,633.9	1.82
Benzene	0.007 lb/bbl	0.55	4,854.5	2.43	VCU	98%	0.01	97.1	0.05
n-Hexane	0.022 lb/bbl	1.74	15,257.0	7.63	VCU	98%	0.03	305.1	0.15

[1] CDPHE emission factor for produced water tanks.

[2] Smokeless combustor controlling PW tanks and condensate/crude oil tanks.

Table B-5 ***EOG Resources, Inc. - West Clark Central Production Facility***
Flare Emission Calculations

Source Type:	Flare
Heat Input:	75.52 MMBtu/hr
Average Hourly Flowrate:	47,962 scf/hr
Total Annual Flowrate:	420.2 MMscf/yr
Estimated HHV:	1,575 Btu/scf
Total VOC Destruction Efficiency:	98%
Molecular Weight:	27.6 lb/lb-mol
H_2S Content of Fuel	5.0 ppm H2S
Operating Hours per Year:	8,760 hr/yr

Pollutant	Emission Factors [a]	Emissions	
		lb/hr [b], [c]	tpy [d]
NO_x	0.068 lb/MMBtu	5.14	22.49
CO	0.370 lb/MMBtu	27.94	122.4
SO_2	0.00054 lb/MMBtu	0.04	0.18
PM_{10}	40.0 µg / ℓ^3	1.27	5.56
$PM_{2.5}$	40.0 µg / ℓ^3	1.27	5.56

Pollutant	Wt % of Gas [e]	Emission Factor [f] (lb/MMscf)	VOC Emission Rates [g]			
			Uncontrolled		Controlled	
VOC	42.0833	30,698.0	1,472.3 lb/hr	6,448.88 tpy	29.45 lb/hr	128.98 tpy
CO_2 (uncombusted)	1.1366	829.1	39.8 lb/hr	174.17 tpy	39.77 lb/hr	174.17 tpy
CH_4	32.2119	23,497.2	1,127.0 lb/hr	4,936.18 tpy	22.54 lb/hr	98.72 tpy
Benzene	0.5612	409.4	19.63 lb/hr	86.00 tpy	0.39 lb/hr	1.72 tpy
Toluene	0.5040	367.6	17.63 lb/hr	77.23 tpy	0.35 lb/hr	1.54 tpy
Ethylbenzene	0.0077	5.6	0.27 lb/hr	1.18 tpy	0.01 lb/hr	0.02 tpy
Xylenes	0.0388	28.3	1.36 lb/hr	5.94 tpy	0.03 lb/hr	0.119 tpy
n-Hexane	1.4983	1,092.9	52.42 lb/hr	229.60 tpy	1.05 lb/hr	4.59 tpy
2,2,4-TMP	0.0624	45.5	2.18 lb/hr	9.56 tpy	0.04 lb/hr	0.19 tpy

Notes:

(a) Emission factors are from AP-42 Tables 13.5-1 & 2 (Industrial Flares), 40 CFR 98 Equation W-21 and 40 CFR 98 Table C-2

40 µg / L is for lightly smoking flare (this is conservative as this unit is smokeless in design).

SO_2 emissions based on complete conversion of H2S to SO2

(ppm H2S) / (379 scf/lb-mole) * (1 mole SO2/mole H2S) * (64 lb SO2/lb-mole) / (Btu/scf) = lb SO_2 / MMBtu

(b) Hourly Emission Rate except for $PM_{10;\ lb/hr}$ = (Emission Factor, lb/MMBtu) * (Heat Input, MMBtu/hr)

(c) (MMscf CH_4) (10.6 scf E/scf CH_4) (0.0283 m^3/scf E) (40 µ PM_{10}/L E) (1000 l/m^3) (g/106 µg) (lb/453.59 g) / (hr/yr) = lb PM_{10} / hr

(d) Annual Emission Rate (tpy) = (Hourly Emission Rate, lb/hr) * (hr/yr) / (2,000 lb/ton)

(e) Based on the weighted average flare gas analysis

(f) Emission Factor (lb/MMscf) = (MW, lb/lb-mole) / (379 scf/lb-mole) * (consituent weight %) / 100 / 10^6

No control is provided for CO_2 in the flare waste gas

(e) VOC and HAP emisssions:

Uncontrolled

(scf/hr) * (lb/MMscf) / 10^6 = lb/hr

(lb /hr) (hr/yr) (ton/2,000 lb) = ton/yr

Controlled

(lb/hr) (100 - DE %) / (100) = lb/hr

(ton/yr) (100 - DE%) / (100) = ton/yr

Table B-6 ***EOG Resources, Inc. - West Clark Central Production Facility***
VOC Emissions from Truck Loading [AP-42 Chapter 5.2 (1/95)]

Site	Product	Loading Mode	Sales	Sales (1,000 gal./year)	Saturation Factor (S) [1]	True Vapor Pressure (P) [psia]	Molecular Weight (M) [lb/lb-mol]	Bulk Temp. (T) [F]	Uncontrolled Loading Loss (L_L) [2] [lb/1,000-gal]	Control Efficiency [%]	Controlled Loading Loss (L_L) [lb/1,000-gal]	VOC Emissions
West Clark CPF	crude oil	Submerged, Dedicated Normal Service	1,423,500 bbl/year	59,787.0	0.6	0.95	47.69	41.43	0.67	uncontrolled	0.673	20.1 tpy

1,423,500 bbls/yr assumes that 3,900 bbl/day of crude oil is loaded to trucks for 365 days per year.

[1] Source: AP-42 Table 5.2-1 (1/95)

[2] Equation 1 for loading losses: (12.46) * (SPM / T) = L_L

Where:

L_L = loading losses, lbs/1000 gal of liquid loaded
S = saturation factor
P = true vapor pressure of liquid loaded (psia)
M = Molecular wt of vapors, lb/lb-mol (from Bryan Research & Engineering, Inc. ProMax™ 3.2 simulation software program using Empact Extended Gas Liquid Analysis: 02-08-13 for Tebo 3-1H)
T = temperature of bulk liquids loaded °R (°F = 460)

AP-42 Chapter 5.2, Table 5.2-1 (1/95)	
Tank trucks and rail tank cars Submerged loading of a clean cargo tank	0.5
Submerged loading: dedicated normal service	**0.6**
Submerged loading: dedicated vapor balance service	1.0
Splash loading of a clean cargo tank	1.45
Splash loading: dedicated normal service	1.45
Splash loading: dedicated vapor balance service	1
Marine vesselsa Submerged loading: ships	0.2
Submerged loading: barges	0.5

HAP	Wt. % [3]	HAP Emissions	
n-Hexane	1.701	684.61 lb/yr	0.34 tpy
Benzene	0.175	70.43 lb/yr	0.04 tpy
2,2,4 Trimethylpentane	0.404	162.60 lb/yr	0.08 tpy
Toluene	1.027	413.34 lb/yr	0.21 tpy
Ethylbenzene	0.466	187.55 lb/yr	0.09 tpy
Xylenes	0.986	396.84 lb/yr	0.20 tpy
Total		1,915.39 lb/yr	**0.96 tpy**

[3] From Precision Analysis Liquid Analyses for West Clark Riverview 4-3031H (06-25-2013).

Table B-7 EOG Resources, Inc. - West Clark Central Production Facility
Process Heater(s) Emission Calculations

AP-42 Emission Factors for Natural Gas Combustion		
NO_x Emission Factor =	100.0 lb/MMscf	[AP-42, Table 1.4-1; <300,000 Btu/hr]
NO_x Emission Factor =	94.0 lb/MMscf	[AP-42, Table 1.4-1; >300,000 Btu/hr]
CO Emission Factor =	84.0 lb/MMscf	[AP-42, Table 1.4-1; <300,000 Btu/hr]
CO Emission Factor =	40.0 lb/MMscf	[AP-42, Table 1.4-1; >300,000 Btu/hr]
VOC Emission Factor =	5.5 lb/MMscf	[AP-42, Table 1.4-2]
SO_2 Emission Factor =	0.00054 lb/MMBtu	5 ppm H2S
PM_{10} Emission Factor =	7.6 lb/MMscf	[AP-42, Table 1.4-2]
$PM_{2.5}$ Emission Factor =	7.6 lb/MMscf	[AP-42, Table 1.4-2]

Natural Gas Higher Heating Value =	1,575 Btu/scf
Annual Hours of Operation	8,760 hr/yr

Process Unit	Input Duty	Fuel Consumption	No. Of Units
Group Treater 1	0.750 MMBtu/hr	4.17 MMscf/yr	1
Group Treater 2	0.750 MMBtu/hr	4.17 MMscf/yr	1
Total Heat Input & Fuel Consumption	1.500 MMBtu/hr	8.34 MMscf/yr	2

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Group Treater 1	**0.20**	**0.011**	**0.08**	**0.0018**	**0.016**	**0.016**
Group Treater 2	**0.20**	**0.011**	**0.08**	**0.0018**	**0.016**	**0.016**
Total Process Heater Emissions	**0.39**	**0.02**	**0.17**	**0.00**	**0.03**	**0.03**

Table B-7(a)

EOG Resources, Inc. - West Clark Central Production Facility
Process Heater(s) Hazardous Air Pollutant Emissions Calculations

Annual Hours of Operation	8,760 hr/yr
Total Maximum Heat Input	1.500 MMBtu/hr
Average Higher Heating Value	1,575 Btu/scf
Fuel Consumption (HHV)	0.0010 MMscf/hr
Fuel Consumption (HHV)	8.34 MMscf/yr
Number of Heaters	2

Pollutant	Emission Factor (lb/MMscf) [a]	Emission Rates		
		Total for Two (2) Heaters		
		(lb/hr) [b]	(lbs/yr)	(tpy) [c]
2-Methylnaphthalene	2.4E-05	2.29E-08	2.00E-04	1.00E-07
3-Methylchloranthrene	1.8E-06	1.71E-09	1.50E-05	7.51E-09
7,12-Dimethylbenz(a)anthracene	1.6E-05	1.52E-08	1.34E-04	6.68E-08
Acenaphthene	1.8E-06	1.71E-09	1.50E-05	7.51E-09
Acenaphthylene	1.8E-06	1.71E-09	1.50E-05	7.51E-09
Anthracene	2.4E-06	2.29E-09	2.00E-05	1.00E-08
Benz(a)anthracene	1.8E-06	1.71E-09	1.50E-05	7.51E-09
Benzene	2.1E-03	2.00E-06	1.75E-02	8.76E-06
Benzo(a)pyrene	1.2E-06	1.14E-09	1.00E-05	5.01E-09
Benzo(b)fluoranthene	1.8E-06	1.71E-09	1.50E-05	7.51E-09
Benzo(g,h,i)perylene	1.2E-06	1.14E-09	1.00E-05	5.01E-09
Benzo(k)fluoranthene	1.8E-06	1.71E-09	1.50E-05	7.51E-09
Chrysene	1.8E-06	1.71E-09	1.50E-05	7.51E-09
Dibenzo(a,h)anthracene	1.2E-06	1.14E-09	1.00E-05	5.01E-09
Dichlorobenzene	1.2E-03	1.14E-06	1.00E-02	5.01E-06
Fluoranthene	3.0E-06	2.86E-09	2.50E-05	1.25E-08
Fluorene	2.8E-06	2.67E-09	2.34E-05	1.17E-08
Formaldehyde	7.5E-02	7.14E-05	6.26E-01	3.13E-04
Hexane	1.8E+00	1.71E-03	1.50E+01	**7.51E-03**
Indeno(1,2,3-cd)pyrene	1.8E-06	1.71E-09	1.50E-05	7.51E-09
Naphthalene	6.1E-04	5.81E-07	5.09E-03	2.55E-06
Phenanathrene	1.7E-05	1.62E-08	1.42E-04	7.09E-08
Pyrene	5.0E-06	4.76E-09	4.17E-05	2.09E-08
Toluene	3.4E-03	3.24E-06	2.84E-02	1.42E-05
			Heater Total HAPs	**0.0079 tpy**
			Maximum Individual HAP	**0.0075 tpy**

Notes:

(a) Emission factors from AP-42, Section 1.4, Table 1.4-3 (7/98).

(b) Hourly Emission Rate (lb/hr) = (MMscf/hr) * (lb/MMscf)

(c) Annual Emission Rate (tpy) = (MMscf/yr) * (lb/MMscf) / (2,000 lb/ton)

Table B-8 EOG Resources, Inc. - West Clark Central Production Facility
Fugitive Equipment Leaks Emissions Calculations

Service	Equipment Type	Emission Factors [a] kg/hr/source	Count [b]	Emissions																	CH_4		
				VOC			n-Hexane			Benzene			Toluene			Ethylbenzene			Xylene					
				wt %	lb/hr [c]	tpy [d]	wt %	lb/hr [c]	tpy [d]	wt %	lb/hr [c]	tpy [d]	wt %	lb/hr [c]	tpy [d]	wt %	lb/hr [c]	tpy [d]	wt %	lb/hr [c]	tpy [d]	wt %	lb/hr [c]	tpy [d]
Gas [e]	Valves	4.50E-03	56	42.08%	0.23	1.02	1.50%	0.01	0.04	0.56%	0.00	0.01	0.50%	0.00	0.01	0.01%	0.00	0.00	0.04%	0.00	0.00	32.21%	0.18	0.78
	Pump Seals	2.40E-03	0		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
	Others	8.80E-03	35		0.29	1.25		0.01	0.04		0.00	0.02		0.00	0.01		0.00	0.00		0.00	0.00		0.22	0.96
	Connectors	2.00E-04	576		0.11	0.47		0.00	0.02		0.00	0.01		0.00	0.01		0.00	0.00		0.00	0.00		0.08	0.36
	Flanges	3.90E-04	8		0.00	0.01		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.01
	Open-Ended	2.00E-03	9		0.02	0.07		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.01	0.06
Light Oil [f]	Valves	2.50E-03	72	99.53%	0.39	1.73	1.70%	0.01	0.03	0.18%	0.00	0.00	1.03%	0.00	0.02	0.47%	0.00	0.01	0.99%	0.00	0.02	0.10%	0.00	0.00
	Pump Seals	1.30E-02	2		0.06	0.25		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
	Others	7.50E-03	15		0.25	1.08		0.00	0.02		0.00	0.00		0.00	0.01		0.00	0.01		0.00	0.01		0.00	0.00
	Connectors	2.10E-04	520		0.24	1.05		0.00	0.02		0.00	0.00		0.00	0.01		0.00	0.00		0.00	0.01		0.00	0.00
	Flanges	1.10E-04	24		0.01	0.03		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
	Open-Ended	1.40E-03	7		0.02	0.09		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
Water/Oil [g]	Valves	9.80E-05	24	100.00%	0.01	0.02	0.00%	0.00	0.00	0.12%	0.00	0.00	0.03%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00
	Pump Seals	2.40E-05	0		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
	Others	1.40E-02	6		0.19	0.81		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
	Connectors	1.10E-04	51		0.01	0.05		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
	Flanges	2.90E-06	4		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
	Open-Ended	2.50E-04	5		0.00	0.01		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
Total			1414		1.82	7.96		0.04	0.17		0.01	0.05		0.02	0.08		0.00	0.02		0.01	0.04		0.50	2.17

Notes:

(a) Emission factors are from Table 2-4 of the "Protocol for Equipment Leak Emission Estimates". EPA-453/R-95-017.

(b) Based on a representative component count for each piece of equipment

(c) Hourly Emission Rate (lb/hr) = (Emission Factor, kg/hour/source) * (count) * (1000 kg/g) / (453.59 g/lb) * (wt %)

(d) Annual Emission Rate (tpy) = (Hourly Emission Rate, lb/hr) * (hr/yr) / (2,000 lb/ton)

(e) Weight Percents of Hydrocarbons taken from average Fuel Gas Analysis for CWU 911-25, 1498-25D, 1499-25D, 1500-25D, 1501-25D, 1502-25D (01/31/2012)

(f) Weight Percents of Hydrocarbons taken from average Oil Analysis for CWU 1498-25D, 1500-25D, 1501-25D, 1502-25D, 911-25 (01/31/2012)

(g) Gas Research Institute (GRI) Technical Reference Manual for GRI-HAPCalc, Software for Estimating Emissions of Hazardous Air Pollutants and Criteria Air Pollutants from Natural Gas Industry Operations, GRI-96/0346

Table B-9

EOG Resources, Inc. - West Clark Central Production Facility

Estimated Potential Greenhouse Gas Emissions (GHG)

Unit	hr/yr	Rating	CO_2 Emission		CH_4 Emission		N_2O Emission		CO_2e Emission Rate [4]	
			Factor	Rate	Factor	Rate	Factor	Rate		
Crude Oil Tanks [1]	8,760	N/A	0.03 lb/hr	0.2 tpy	0.01 lb/hr	0.02 tpy	N/A		**0.7 tpy**	**0.6 MT/yr**
Vapor Recovery Tower [1]	8,760	N/A	0.33 lb/hr	1.5 tpy	1.338 lb/hr	0.117 tpy	N/A		**3.9 tpy**	**3.6 MT/yr**
Enclosed Combustor Tank Emissions [2]	8,760	1.89 MMBtu/hr	0.054 lb/hr	0.2 tpy	0.754 lb/hr	0.1 tpy	0.0001 kg/MMBtu	0.002 tpy	**2.2 tpy**	**2.0 MT/yr**
Enclosed Combustor VRT Emissions [2]	8,760	23.77 MMBtu/hr	0.967 lb/hr	4.2 tpy	24.213 lb/hr	2.1 tpy	0.0001 kg/MMBtu	0.023 tpy	**55.9 tpy**	**50.7 MT/yr**
Treater Gas Emergency Flare [3]	8,760	75.52 MMBtu/hr	200,700.9 lb/MMscf 39.766 lb/hr	42,162.3 tpy 174.2 tpy	23,497.2 lb/MMscf	98.7 tpy	0.0001 kg/MMBtu	0.073 tpy	**44,432.3 tpy**	**40,309.0 MT/yr**
Group Treater 1	8,760	0.75 MMBtu/hr	53.02 kg/MMBtu	384.0 tpy	0.001 kg/MMBtu	0.007 tpy	0.0001 kg/MMBtu	0.001 tpy	**384.4 tpy**	**348.7 MT/yr**
Group Treater 2	8,760	0.75 MMBtu/hr	53.02 kg/MMBtu	384.0 tpy	0.001 kg/MMBtu	0.007 tpy	0.0001 kg/MMBtu	0.001 tpy	**384.4 tpy**	**348.7 MT/yr**
Fugitive Components						2.170 tpy			**45.6 tpy**	**41.3 MT/yr**
		Totals		**43,110.5 tpy**		**103.2 tpy**		**0.1 tpy**	**45,309.2 tpy**	**41,104.5 MT/yr**

[1] For CO_2 and CH_4 there are no emission factors used, instead emissions are taken directly from Bryan Research & Engineering, Inc. ProMax™ 3.2 suimulation software program.

[2] All GHG emission factors for enclosed combustor and heaters are from Table C-2 of Subpart C of Part 98 - *Default Emission Factors for various types of fuel* (natural gas).

[3] Emission Factor (lb/MMscf) = (MW, lb/lb-mole) / (379 scf/lb-mole) * (consituent weight %) / 100 / 10^6

[3] CO_2e emissions are defined as the sum of the mass emissions for individual GHGs, with each adjusted to account for its global warming potential (GWP) relative to a value of 1.0 for CO_2.

(scf/hr) (lb/lb-mol) (WtFrac) (lb-mol/379.3 scf) = lb/hr

(CO_2 tpy)*(1 GWP) + (CH_4 tpy) * (21 GWP) + (N_2O) * (310 GWP) = tpy CO_2e

Appendix C

Oil, Gas, & Produced Water Production Data for all Eight Wells

	Totals All Wells				
	Oil Prod	**Water Prod**	**Gas Prod**	**Gas Sales**	**Gas Flared**
Totals	842,077 bbls/yr	418,995 bbls/yr	1,141,193.8 Mscf/yr	721,043.2 Mscf/yr	420,150.6 Mscf/yr
Daily AVG	3,899.2 bbl/day	1,932.3 bbl/day	5,069.0 Mscf/day	3,074.1 Mscf/day	1,994.8 Mscf/day
Daily MAX	15,508.3 bbl/day	9,498.0 bbl/day	20,731.3 Mscf/day	12,362.5 Mscf/day	8,368.8 Mscf/day
AVG 1st 30 Days	6,178.3 bbl/day	2,528.0 bbl/day	8,055.6 Mscf/day	4,024.9 Mscf/day	4,030.7 Mscf/day
0.6 Decline Factor	3,707.0 bbl/day	1,516.8 bbl/day	4,833.4 Mscf/day	2,415.0 Mscf/day	2,418.4 Mscf/day
AVG Last 30 Days	3,820.8 bbl/day	2,118.6 bbl/day	5,942.3 Mscf/day	3,426.3 Mscf/day	2,516.0 Mscf/day
0.6 Decline Factor	2,292.5 bbl/day	1,271.1 bbl/day	3,565.4 Mscf/day	2,055.8 Mscf/day	1,509.6 Mscf/day

WC 1-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
9/7/2013	116.74	89	139.61	71.48
9/6/2013	175.5	133	234.13	135.96
9/5/2013	187.36	142	248.62	140.77
9/4/2013	215.68	164	248.97	117.19
9/3/2013	213.26	162	247.03	100.11
9/2/2013	224.95	171	222.65	33.69
9/1/2013	140.82	107	161.87	87.26
8/31/2013	20.26	15	27.19	21.31
8/30/2013	228.2	173	286.1	126.41
8/29/2013	216.87	165	271.61	1.55
8/28/2013	210.18	160	273.69	80.69
8/27/2013	222.9	169	275	174.91
8/26/2013	221.39	168	276.32	218.45
8/25/2013	222.6	169	279.46	205.39
8/24/2013	228.7	174	275.91	64.61
8/23/2013	230.45	175	271.78	91.13
8/22/2013	239.33	182	263.05	155.09
8/21/2013	230.54	175	260.07	76.84
8/20/2013	220.66	168	258.88	102.37
8/19/2013	229.29	174	252.96	204.43
8/18/2013	220.48	167	258.48	224.27
8/17/2013	221.43	168	258.52	142.96
8/16/2013	216.06	164	255.14	188.73
8/15/2013	220.87	168	206.73	97.25
8/14/2013	175.42	133	237.9	0.27
8/13/2013	248.24	189	226.64	2.71
8/12/2013	221.3	168	279.78	226.67
8/11/2013	223.18	169	237.82	166.55
8/10/2013	217.82	165	218.84	105.55
8/9/2013	206.52	160	203.07	112.33
8/8/2013	171.73	134	205.49	117.03
8/7/2013	0	0	0	0
8/6/2013	0	0	0	0
8/5/2013	0	0	0	0
8/4/2013	0	0	0	0
8/3/2013	0	0	0	0
8/2/2013	0	0	0	0
8/1/2013	0	0	0	0
7/31/2013	0	0	0	0
7/30/2013	415.18	315	1,064.48	358.99
7/29/2013	386.94	291	1,022.17	389.21
7/28/2013	378.17	287	1,077.38	437.15
7/27/2013	369.17	280	1,039.64	398.26
7/26/2013	401.94	305	1,002.60	368.62
7/25/2013	359.23	273	1,018.70	810.66
7/24/2013	307.9	234	894.08	775.24
7/23/2013	402.84	306	800.22	680.53
7/22/2013	437.07	332	1,394.23	574.56
7/21/2013	411.46	312	1,119.40	0.43
7/20/2013	404.68	307	1,033.96	0.61
7/19/2013	400.26	304	1,179.09	89.21
7/18/2013	440.38	334	1,151.22	529.17
7/17/2013	400.79	304	1,042.44	701.89
7/16/2013	387.55	294	793.01	399.21
7/15/2013	377.7	287	399.54	268.71
7/14/2013	333.81	253	889.43	431.89
7/13/2013	307	233	846.83	432.68
7/12/2013	316.95	241	863.9	434.41
7/11/2013	291.23	221	804.99	485.8
7/10/2013	321.13	244	874	689.01
7/9/2013	317.68	241	868.57	747.71
7/8/2013	325.84	247	881.93	735.2
7/7/2013	325.95	247	896.6	581.88

WC 2-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
9/7/2013	121.8	176	183.92	94.16
9/6/2013	169.12	244	284.88	165.43
9/5/2013	228.07	329	382.12	216.36
9/4/2013	262.54	378	382.67	180.12
9/3/2013	259.6	374	379.67	153.87
9/2/2013	273.82	395	342.21	51.79
9/1/2013	9.02	13	13.09	7.06
8/31/2013	24.67	36	41.78	32.75
8/30/2013	277.79	400	439.72	194.29
8/29/2013	264	380	417.45	2.39
8/28/2013	255.84	369	420.65	124.01
8/27/2013	271.33	391	422.66	268.83
8/26/2013	269.49	388	424.7	335.76
8/25/2013	270.96	391	429.53	315.68
8/24/2013	278.38	401	424.08	99.31
8/23/2013	280.52	404	417.72	140.06
8/22/2013	291.33	420	404.3	238.37
8/21/2013	281.61	406	399.73	118.11
8/20/2013	268.6	387	397.89	157.34
8/19/2013	285.05	411	397.06	320.89
8/18/2013	268.39	387	397.27	344.69
8/17/2013	269.54	388	397.34	219.73
8/16/2013	263	379	392.14	290.08
8/15/2013	268.86	387	317.74	149.48
8/14/2013	213.53	308	365.65	0.42
8/13/2013	302.18	435	348.34	4.16
8/12/2013	269.38	388	430.01	348.39
8/11/2013	271.67	392	365.53	255.99
8/10/2013	187.81	271	238.25	114.91
8/9/2013	0	0	0	0
8/8/2013	228.05	338	344.54	196.22
8/7/2013	283.22	421	372.76	152.68
8/6/2013	264.77	392	353.83	138.36
8/5/2013	304.34	452	372.92	199.09
8/4/2013	271.91	404	374.27	169.6
8/3/2013	279.68	415	378.39	252.45
8/2/2013	285.34	428	375.41	251.13
8/1/2013	144.78	216	230.99	116.33
7/31/2013	379.8	299	727.95	142.78
7/30/2013	491.91	387	876.47	295.59
7/29/2013	229.4	179	420.81	160.23
7/28/2013	0	0	0	0
7/27/2013	0	0	0	0
7/26/2013	0	0	0	0
7/25/2013	0	0	0	0
7/24/2013	364.8	287	736.16	638.32
7/23/2013	477.28	376	658.88	560.33
7/22/2013	409.95	323	908.81	374.52
7/21/2013	487.5	384	921.68	0.36
7/20/2013	479.46	378	851.33	0.5
7/19/2013	474.23	374	970.83	73.46
7/18/2013	521.75	411	947.89	435.7
7/17/2013	474.85	374	858.31	577.92
7/16/2013	459.16	362	652.94	328.7
7/15/2013	447.49	352	328.97	221.25
7/14/2013	395.5	312	732.33	355.6
7/13/2013	363.73	286	697.26	356.26
7/12/2013	375.52	296	711.31	357.68
7/11/2013	345.05	272	662.8	400
7/10/2013	380.47	300	719.63	567.31
7/9/2013	376.38	296	715.16	615.65
7/8/2013	386.05	304	726.16	605.34
7/7/2013	386.19	304	738.24	479.11

WC 5-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
9/7/2013	753.45	384	1,234.92	632.27
9/6/2013	660.74	337	1,208.11	701.54
9/5/2013	705.42	359	1,282.89	726.37
9/4/2013	812.04	414	1,284.72	604.7
9/3/2013	802.92	409	1,274.67	516.59
9/2/2013	846.92	432	1,148.91	173.86
9/1/2013	669.68	341	1,055.07	568.74
8/31/2013	915.56	467	1,683.35	1,319.60
8/30/2013	859.18	438	1,476.28	652.3
8/29/2013	816.52	416	1,401.51	8.01
8/28/2013	791.31	403	1,412.24	416.35
8/27/2013	839.2	428	1,419.00	902.54
8/26/2013	833.53	425	1,425.84	1,127.24
8/25/2013	838.07	427	1,442.05	1,059.82
8/24/2013	861.03	439	1,423.74	333.41
8/23/2013	867.62	442	1,402.39	470.22
8/22/2013	901.07	459	1,357.35	800.27
8/21/2013	866.86	442	1,342.00	396.52
8/20/2013	830.76	423	1,335.83	528.24
8/19/2013	881.64	449	1,333.04	1,077.32
8/18/2013	830.11	423	1,333.76	1,157.24
8/17/2013	833.66	425	1,333.99	737.7
8/16/2013	813.46	415	1,316.52	973.89
8/15/2013	831.56	424	1,066.73	501.84
8/14/2013	660.43	337	1,227.60	1.4
8/13/2013	934.62	476	1,169.48	13.97
8/12/2013	144.9	74	251.07	203.41
8/11/2013	840.26	428	1,227.19	859.43
8/10/2013	820.08	418	1,129.21	544.63
8/9/2013	811.35	421	1,093.42	604.84
8/8/2013	705.35	370	1,156.71	658.77
8/7/2013	875.99	460	1,251.45	512.58
8/6/2013	818.92	429	1,187.92	464.52
8/5/2013	941.31	494	1,251.99	668.41
8/4/2013	840.99	442	1,256.52	569.4
8/3/2013	865.05	454	1,270.36	847.55
8/2/2013	882.54	468	1,260.38	843.13
8/1/2013	447.81	236	775.51	390.57
7/31/2013	592.9	439	783.25	153.62
7/30/2013	767.92	569	943.06	318.04
7/29/2013	715.3	524	905.56	344.81
7/28/2013	699.45	518	954.48	387.28
7/27/2013	682.8	506	921.05	352.83
7/26/2013	743.42	551	888.23	326.57
7/25/2013	664.43	492	902.5	718.19
7/24/2013	569.49	422	792.09	686.81
7/23/2013	745.09	552	708.94	602.9
7/22/2013	808.4	599	1,235.19	509.02
7/21/2013	761.04	564	991.71	0.38
7/20/2013	748.49	554	916.01	0.54
7/19/2013	740.32	548	1,044.58	79.04
7/18/2013	814.52	603	1,019.90	468.8
7/17/2013	741.3	549	923.52	621.83
7/16/2013	716.8	531	702.55	353.68
7/15/2013	698.58	517	353.96	238.06
7/14/2013	617.41	457	787.97	382.62
7/13/2013	567.82	421	750.23	383.33
7/12/2013	586.23	434	765.35	384.85
7/11/2013	538.66	399	713.16	430.38
7/10/2013	593.95	440	774.3	610.41
7/9/2013	587.57	435	769.49	662.42
7/8/2013	602.66	446	781.32	651.34
7/7/2013	602.88	447	794.33	515.51

WC 1-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
7/6/2013	342.09	260	918.63	746.52
7/5/2013	347.95	264	946.55	703.27
7/4/2013	357.72	272	933.32	734.12
7/3/2013	369.39	277	936.07	709.15
7/2/2013	372.22	283	936.44	717.58
7/1/2013	381.02	289	662.87	396.5
6/30/2013	365.95	324	598.55	358.23
6/29/2013	357.92	317	585.39	546.55
6/28/2013	333.57	295	518.18	417.43
6/27/2013	14.46	13	25.58	24.24
6/26/2013	0	0	0	0
6/25/2013	0	0	0	0
6/24/2013	0	0	0	0
6/23/2013	0	0	0	0
6/22/2013	0	0	0	0
6/21/2013	254.36	225	459.39	289.29
6/20/2013	278.09	246	458.06	327.15
6/19/2013	455.14	403	704.75	143.49
6/18/2013	391.11	346	715.18	321.6
6/17/2013	371.48	329	417.6	235.71
6/16/2013	371.26	328	794.63	401.18
6/15/2013	399.66	354	637.53	350.1
6/14/2013	546.83	484	697.33	405.38
6/13/2013	448.3	397	816.76	376.04
6/12/2013	387.67	343	619.33	319.84
6/11/2013	418.82	370	829.96	367.9
6/10/2013	233.6	207	607.25	41.25
6/9/2013	496.37	439	253.69	126.6
6/8/2013	215.7	191	386.41	344.41
6/7/2013	280.16	248	458.74	298.43
6/6/2013	288.93	256	458.91	408.78
6/5/2013	251.28	222	478.55	455.55
6/4/2013	267.15	236	479.07	456.69
6/3/2013	207.51	183	322.42	225.27
6/2/2013	205	181	327.31	326.52
6/1/2013	189.11	216	256.66	99.76
5/31/2013	0	0	0	0
5/30/2013	0	0	0	0
5/29/2013	0	0	0	0
5/28/2013	0	0	0	0
5/27/2013	0	0	0	0
5/26/2013	0	0	0	0
5/25/2013	0	0	0	0
5/24/2013	0	0	0	0
5/23/2013	0	0	0	0
5/22/2013	0	0	0	0
5/21/2013	0	0	0	0
5/20/2013	0	0	0	0
5/19/2013	0	0	0	0
5/18/2013	0	0	0	0
5/17/2013	0	0	0	0
5/16/2013	0	0	0	0
5/15/2013	0	0	0	0
5/14/2013	0	0	0	0
5/13/2013	0	0	0	0
5/12/2013	0	0	0	0
5/11/2013	0	0	0	0
5/10/2013	0	0	0	0
5/9/2013	0	0	0	0
5/8/2013	0	0	0	0
5/7/2013	0	0	0	0
5/6/2013	0	0	0	0

WC 2-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
7/6/2013	405.3	319	756.38	614.67
7/5/2013	412.24	325	779.36	579.06
7/4/2013	423.82	334	768.47	604.45
7/3/2013	438.04	341	770.74	583.9
7/2/2013	441	347	771.04	590.83
7/1/2013	451.42	356	545.79	326.47
6/30/2013	326.89	134	1,005.56	601.81
6/29/2013	319.72	131	983.45	918.19
6/28/2013	295.65	121	870.53	701.27
6/27/2013	116.23	48	386.73	366.42
6/26/2013	0	0	0	0
6/25/2013	0	0	0	0
6/24/2013	0	0	0	0
6/23/2013	0	0	0	0
6/22/2013	0	0	0	0
6/21/2013	227.21	93	771.77	486
6/20/2013	248.41	102	769.53	549.61
6/19/2013	406.56	166	1,183.96	241.07
6/18/2013	345.4	141	1,201.48	540.29
6/17/2013	331.84	136	701.56	396
6/16/2013	331.64	136	1,334.96	673.97
6/15/2013	357	146	1,071.03	588.16
6/14/2013	488.47	200	1,171.51	681.03
6/13/2013	400.46	164	1,372.14	631.74
6/12/2013	346.3	142	1,040.47	537.33
6/11/2013	374.12	153	1,394.32	618.06
6/10/2013	208.66	85	1,020.17	69.29
6/9/2013	443.39	181	426.2	212.69
6/8/2013	192.68	79	649.16	578.61
6/7/2013	250.26	102	770.67	501.35
6/6/2013	258.09	106	770.95	686.74
6/5/2013	224.46	92	803.95	765.32
6/4/2013	238.64	98	804.83	767.23
6/3/2013	184.37	75	541.66	378.45
6/2/2013	183.12	75	549.88	548.55
6/1/2013	253.38	111	646.78	251.38
5/31/2013	342.28	140	779.7	756.32
5/30/2013	946.36	387	797.35	508.46
5/29/2013	504.9	207	864.76	667.89
5/28/2013	290.95	119	742.05	681.31
5/27/2013	323.91	132	699.16	460.33
5/26/2013	855.84	350	858	222.32
5/25/2013	381.81	156	862.37	584
5/24/2013	330.47	135	933.7	634.3
5/23/2013	778.63	318	1,257.30	883.75
5/22/2013	825.75	338	1,002.74	963.81
5/21/2013	1,429.46	585.00	1,009.37	965.57
5/20/2013	1,002.46	410.00	1,080.78	951.16
5/19/2013	0	0	0	0
5/18/2013	0	0	0	0
5/17/2013	0	0	0	0
5/16/2013	0	0	0	0
5/15/2013	0	0	0	0
5/14/2013	0	0	0	0
5/13/2013	0	0	0	0
5/12/2013	649.72	266	1,189.51	716.03
5/11/2013	686.93	281	1,127.49	355.32
5/10/2013	625.21	256	1,573.36	404.56
5/9/2013	642.27	261	346.98	256.59
5/8/2013	1,018.02	416.00	461.05	0
5/7/2013	566.04	232	1,203.91	0.68
5/6/2013	449.24	184	766.82	156.52

WC 5-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
7/6/2013	632.72	469	813.84	661.37
7/5/2013	643.56	477	838.57	623.05
7/4/2013	661.62	490	826.86	650.38
7/3/2013	682.81	500	829.29	628.26
7/2/2013	688.44	510	829.62	635.72
7/1/2013	704.72	522	587.26	351.27
6/30/2013	470.81	823	914.14	547.1
6/29/2013	460.48	805	894.04	834.72
6/28/2013	435.33	761	791.39	637.52
6/27/2013	446.38	780	937.52	888.3
6/26/2013	401.86	703	1,165.58	1,073.21
6/25/2013	437.28	764	1,118.11	1,036.10
6/24/2013	432.75	757	1,079.03	1,077.79
6/23/2013	438.81	767	1,127.46	615.58
6/22/2013	456.68	798	1,016.27	900.9
6/21/2013	327.24	572	701.6	441.82
6/20/2013	357.77	625	699.57	499.65
6/19/2013	585.55	1024	1,076.33	219.15
6/18/2013	513.53	898	1,092.26	491.17
6/17/2013	298.71	522	398.61	225
6/16/2013	0	0	0	0
6/15/2013	471.32	824	892.53	490.13
6/14/2013	688.87	1204	1,042.82	606.22
6/13/2013	576.76	1008	1,247.40	574.31
6/12/2013	498.76	872	945.88	488.48
6/11/2013	538.83	942	1,267.57	561.87
6/10/2013	300.53	525	927.43	62.99
6/9/2013	638.6	1116	387.46	193.35
6/8/2013	277.5	485	590.15	526.01
6/7/2013	360.44	630	700.61	455.77
6/6/2013	92.93	162	175.22	156.08
6/5/2013	0	0	0	0
6/4/2013	0	0	0	0
6/3/2013	269.58	467	492.42	344.05
6/2/2013	263.74	461	499.89	498.68
6/1/2013	364.94	686	587.98	228.53
5/31/2013	492.98	862	708.82	687.56
5/30/2013	1,363.01	2,383.00	724.86	462.24
5/29/2013	727.18	1271	786.14	607.17
5/28/2013	419.04	733	674.59	619.37
5/27/2013	466.52	816	635.6	418.48
5/26/2013	1,232.63	2,155.00	780	202.11
5/25/2013	561.44	968	783.97	530.91
5/24/2013	475.96	832	848.82	576.63
5/23/2013	1,121.43	1,961.00	1,143.00	803.41
5/22/2013	1,189.29	2,079.00	911.58	876.19
5/21/2013	2,058.79	3,599.00	917.61	877.79
5/20/2013	1,443.80	2,524.00	982.53	864.69
5/19/2013	2,247.82	3,930.00	2,913.50	2,541.20
5/18/2013	2,074.46	3,627.00	1,787.20	1,782.20
5/17/2013	772.85	1351	1,126.68	784.24
5/16/2013	712.01	1245	1,126.68	106.32
5/15/2013	668.26	1168	1,591.21	841.67
5/14/2013	665.9	1144	2,313.73	893.28
5/13/2013	718.3	1231	1,008.78	1,000.08
5/12/2013	935.77	1636	1,081.38	650.94
5/11/2013	989.36	1730	1,024.99	323.02
5/10/2013	900.47	1574	1,430.33	367.78
5/9/2013	1,162.82	1,975.00	378.52	279.91
5/8/2013	0	0	0	0
5/7/2013	0	0	0	0
5/6/2013	0	0	0	0

WC 1-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
5/5/2013	0	0	0	0
5/4/2013	0	0	0	0
5/3/2013	0	0	0	0
5/2/2013	0	0	0	0
5/1/2013	0	0	0	0
4/30/2013	0	0	0	0
4/29/2013	0	0	0	0
4/28/2013	272.25	203	296.79	8.63
4/27/2013	778.19	586	601.14	22.57
4/26/2013	961.69	724	790.85	106.35
4/25/2013	791.09	596	1,541.38	80.23
4/24/2013	700.65	528	1,195.77	13.04
4/23/2013	647	487	1,281.66	17.74
4/22/2013	588.58	443	1,401.94	23.91
4/21/2013	575.79	434	755.79	2.69
4/20/2013	305.04	230	495.47	12.3
4/19/2013	449.67	339	448.58	8.62
4/18/2013	325.42	245	662.36	228.87
4/17/2013	268.22	202	706.32	315.59
4/16/2013	508.83	383	558.82	337.3
4/15/2013	516.36	389	415.12	278.27
4/14/2013	389.4	293	378.51	175.11
4/13/2013	648.74	489	269.13	186.5
4/12/2013	0	0	0	0
4/11/2013	0	0	0	0
4/10/2013	0	0	0	0
4/9/2013	0	0	0	0
4/8/2013	0	0	0	0
4/7/2013	0	0	0	0
4/6/2013	0	0	0	0
4/5/2013	0	0	0	0
4/4/2013	0	0	0	0
4/3/2013	0	0	0	0
4/2/2013	0	0	0	0
4/1/2013	0	0	0	0
3/31/2013	0	0	0	0
3/30/2013	0	0	0	0
3/29/2013	0	0	0	0
3/28/2013	0	0	0	0
3/27/2013	0	0	0	0
3/26/2013	0	0	0	0
3/25/2013	0	0	0	0
3/24/2013	0	0	0	0
3/23/2013	0	0	0	0
3/22/2013	0	0	0	0
3/21/2013	0	0	0	0
3/20/2013	0	0	0	0
3/19/2013	315.12	237	576.49	575.6
3/18/2013	492.59	371	1,025.16	1,023.64
3/17/2013	775.73	584	1,167.19	1,165.67
3/16/2013	696.98	525	1,235.08	1,233.56
3/15/2013	687.61	518	1,274.31	1,272.79
3/14/2013	634.54	478	1,335.73	1,334.21
3/13/2013	798.51	601	1,389.85	1,388.33
3/12/2013	750.37	565	1,412.96	1,411.44
3/11/2013	634.78	478	1,376.77	1,375.25
3/10/2013	712.37	537	1,294.07	1,292.55
3/9/2013	849.08	639	825.94	824.42
3/8/2013	844.49	636	1,373.49	1,371.97
3/7/2013	553.61	417	1,147.79	1,146.27
3/6/2013	905.51	682	1,516.00	1,514.48
3/5/2013	924.19	696	1,392.74	1,391.22
3/4/2013	862.72	650	1,193.21	1,191.69

WC 2-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
5/5/2013	464.58	190	387.2	197.2
5/4/2013	439.84	180	589.6	399.6
5/3/2013	405.22	166	561	0
5/2/2013	372.49	152	587	0
5/1/2013	518.2	212	304.4	9.4
4/30/2013	0	0	0	0
4/29/2013	0	0	0	0
4/28/2013	175.06	71	236.43	6.88
4/27/2013	504.14	206	478.9	17.98
4/26/2013	623.02	255	630.03	84.72
4/25/2013	512.5	210	1,227.93	63.92
4/24/2013	453.91	186	952.6	10.39
4/23/2013	419.15	171	1,021.02	14.13
4/22/2013	381.3	156	1,116.85	19.05
4/21/2013	373.02	153	602.1	2.14
4/20/2013	197.62	81	394.71	9.8
4/19/2013	291.32	119	357.35	6.86
4/18/2013	210.82	86	527.67	182.32
4/17/2013	173.76	71	562.68	251.41
4/16/2013	329.64	135	445.18	268.7
4/15/2013	334.52	137	330.7	221.68
4/14/2013	252.27	103	301.54	139.5
4/13/2013	445	182	227.01	157.32
4/12/2013	0	0	0	0
4/11/2013	0	0	0	0
4/10/2013	0	0	0	0
4/9/2013	0	0	0	0
4/8/2013	0	0	0	0
4/7/2013	0	0	0	0
4/6/2013	0	0	0	0
4/5/2013	0	0	0	0
4/4/2013	0	0	0	0
4/3/2013	0	0	0	0
4/2/2013	0	0	0	0
4/1/2013	0	0	0	0
3/31/2013	0	0	0	0
3/30/2013	0	0	0	0
3/29/2013	0	0	0	0
3/28/2013	0	0	0	0
3/27/2013	0	0	0	0
3/26/2013	0	0	0	0
3/25/2013	0	0	0	0
3/24/2013	0	0	0	0
3/23/2013	0	0	0	0
3/22/2013	0	0	0	0
3/21/2013	0	0	0	0
3/20/2013	295.82	121	672.95	671.45
3/19/2013	306.22	125	688.89	687.82
3/18/2013	239.34	98	612.52	611.61
3/17/2013	376.91	154	697.37	696.47
3/16/2013	338.65	139	737.94	737.03
3/15/2013	334.09	137	761.38	760.47
3/14/2013	308.31	126	798.07	797.16
3/13/2013	387.98	159	830.41	829.5
3/12/2013	364.59	149	844.22	843.31
3/11/2013	308.42	126	822.6	821.69
3/10/2013	346.13	142	773.18	772.28
3/9/2013	412.55	169	493.49	492.58
3/8/2013	410.32	168	820.64	819.73
3/7/2013	268.99	110	685.78	684.87
3/6/2013	439.97	180	905.78	904.88
3/5/2013	449.04	184	832.14	831.23
3/4/2013	419.18	171	712.92	712.02

WC 5-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
5/5/2013	0	0	0	0
5/4/2013	0	0	0	0
5/3/2013	0	0	0	0
5/2/2013	0	0	0	0
5/1/2013	0	0	0	0
4/30/2013	0	0	0	0
4/29/2013	0	0	0	0
4/28/2013	259.5	445	214.94	6.25
4/27/2013	726.09	1269	435.36	16.34
4/26/2013	897.31	1569	572.75	77.02
4/25/2013	738.13	1290	1,116.30	58.11
4/24/2013	653.74	1143	866	9.45
4/23/2013	603.69	1055	928.2	12.85
4/22/2013	549.18	960	1,015.32	17.32
4/21/2013	537.24	939	547.36	1.95
4/20/2013	284.62	498	358.83	8.91
4/19/2013	34.96	61	27.07	0.52
4/18/2013	25.3	44	39.98	13.81
4/17/2013	0	0	0	0
4/16/2013	0	0	0	0
4/15/2013	0	0	0	0
4/14/2013	0	0	0	0
4/13/2013	0	0	0	0
4/12/2013	0	0	0	0
4/11/2013	0	0	0	0
4/10/2013	0	0	0	0
4/9/2013	0	0	0	0
4/8/2013	0	0	0	0
4/7/2013	0	0	0	0
4/6/2013	0	0	0	0
4/5/2013	0	0	0	0
4/4/2013	0	0	0	0
4/3/2013	0	0	0	0
4/2/2013	0	0	0	0
4/1/2013	0	0	0	0
3/31/2013	0	0	0	0
3/30/2013	0	0	0	0
3/29/2013	0	0	0	0
3/28/2013	0	0	0	0
3/27/2013	0	0	0	0
3/26/2013	0	0	0	0
3/25/2013	0	0	0	0
3/24/2013	0	0	0	0
3/23/2013	0	0	0	0
3/22/2013	0	0	0	0
3/21/2013	0	0	0	0
3/20/2013	191.59	23	235.32	234.8
3/19/2013	475.98	56	578.15	577.25
3/18/2013	372.02	44	514.06	513.29
3/17/2013	585.85	69	585.27	584.51
3/16/2013	526.38	62	619.32	618.56
3/15/2013	519.3	61	638.99	638.22
3/14/2013	479.23	56	669.79	669.02
3/13/2013	603.06	71	696.92	696.16
3/12/2013	566.7	67	708.51	707.75
3/11/2013	479.4	56	690.37	689.61
3/10/2013	538	63	648.9	648.13
3/9/2013	641.25	75	414.16	413.4
3/8/2013	637.78	75	688.72	687.96
3/7/2013	418.1	49	575.55	574.78
3/6/2013	683.87	81	760.18	759.42
3/5/2013	697.98	82	698.37	697.61
3/4/2013	651.55	77	598.32	597.56

WC 1-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
3/3/2013	854.64	644	1,322.32	1,320.80
3/2/2013	803.85	605	1,132.62	1,131.10
3/1/2013	453.08	341	1,280.45	835.16
2/28/2013	519.22	229	692.31	691.39
2/27/2013	552.18	243	843.55	842.4
2/26/2013	565.91	249	920.31	919.39
2/25/2013	791.04	349	964.63	855.02
2/24/2013	644.06	284	1,122.43	1,012.82
2/23/2013	640.58	282	984.86	983.94
2/22/2013	602.73	133	871.02	870.1
2/21/2013	597.83	132	869	868.08
2/20/2013	483.42	107	721.68	720.76
2/19/2013	443.68	98	648.3	647.38
2/18/2013	418.14	92	559.27	558.35
2/17/2013	334.52	74	446.91	445.99
2/16/2013	483.84	107	163.98	163.06
2/15/2013	357.29	79	579.17	578.25
2/14/2013	378.3	83	588.86	587.94
2/13/2013	493.52	109	594.28	593.36
2/12/2013	442.98	98	288.19	287.27
2/11/2013	432.11	95	631.93	631.01
2/10/2013	460.92	102	641.86	640.94
2/9/2013	418.75	92	695.38	694.46
2/8/2013	556.39	123	388.24	387.32
2/7/2013	448.85	99	662.83	518.82
2/6/2013	532.76	117	717.27	716.35
2/5/2013	511.86	113	739.98	739.06
2/4/2013	494.03	109	719.18	718.26
2/3/2013	385.99	85	643.33	642.41
2/2/2013	247.18	54	643.33	642.41
2/1/2013	520.15	115	640.49	639.51
1/31/2013	62.97	15	1,398.48	1,397.15
1/30/2013	417.45	99	1,364.64	1,363.31
1/29/2013	326.61	78	935.97	934.65
1/28/2013	0	0	0	0
1/27/2013	0	0	0	0
1/26/2013	0	0	0	0
1/25/2013	0	0	0	0
1/24/2013	0	0	0	0
1/23/2013	0	0	0	0
1/22/2013	0	0	0	0
1/21/2013	54.79	13	86.1	85.69
1/20/2013	393.25	93	1,179.76	1,177.77
1/19/2013	385.28	91	1,128.79	1,126.80
1/18/2013	152.27	36	723.38	721.76
1/17/2013	312.45	74	939.26	937.43
1/16/2013	226.92	54	666.41	665.41
1/15/2013	0	0	0	0
1/14/2013	434.42	103	969.92	968.93
1/13/2013	363.85	86	905.14	903.15
1/12/2013	372.72	88	1,004.57	1,002.58
1/11/2013	351.9	84	1,013.96	1,011.97
1/10/2013	410.78	97	1,026.58	1,024.59
1/9/2013	375.63	89	1,030.21	1,028.22
1/8/2013	381.9	91	1,061.22	1,059.23
1/7/2013	391.99	93	1,116.45	1,114.46
1/6/2013	412.97	98	1,126.28	1,124.29
1/5/2013	386.84	92	1,947.10	1,126.08
1/4/2013	387.02	92	1,512.82	967.34
1/3/2013	412.07	98	942.85	940.86
1/2/2013	394.26	94	1,022.64	1,020.65
1/1/2013	438.33	104	1,068.23	1,066.24
12/31/2012	478.82	152	416.08	415.28

WC 2-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
3/3/2013	415.25	170	790.06	789.15
3/2/2013	390.57	160	676.72	675.81
3/1/2013	220.14	90	765.05	498.99
2/28/2013	607.88	115	808.55	807.47
2/27/2013	646.47	122	985.18	983.84
2/26/2013	662.55	125	1,074.82	1,073.75
2/25/2013	926.12	175	1,126.59	998.57
2/24/2013	754.04	142	1,310.88	1,182.87
2/23/2013	749.98	142	1,150.22	1,149.14
2/22/2013	705.66	133	1,017.26	1,016.19
2/21/2013	699.92	132	1,014.90	1,013.82
2/20/2013	565.97	107	842.85	841.77
2/19/2013	519.45	98	757.15	756.07
2/18/2013	489.54	92	653.16	652.09
2/17/2013	391.65	74	521.95	520.87
2/16/2013	566.46	107	191.51	190.44
2/15/2013	418.3	79	676.41	675.33
2/14/2013	442.9	84	687.72	686.65
2/13/2013	577.8	109	694.06	692.99
2/12/2013	518.63	98	336.58	335.51
2/11/2013	505.9	96	738.03	736.96
2/10/2013	539.63	102	749.63	748.55
2/9/2013	490.26	93	812.13	811.06
2/8/2013	651.41	123	453.43	452.35
2/7/2013	525.5	99	774.11	605.93
2/6/2013	623.74	118	837.69	836.62
2/5/2013	599.26	113	864.22	863.15
2/4/2013	578.39	109	839.93	838.85
2/3/2013	451.9	85	751.35	750.27
2/2/2013	289.39	55	751.35	750.27
2/1/2013	608.98	115	748.03	746.88
1/31/2013	71.5	21	625.03	624.44
1/30/2013	474.05	142	609.9	609.31
1/29/2013	370.9	111	418.32	417.73
1/28/2013	0	0	0	0
1/27/2013	0	0	0	0
1/26/2013	0	0	0	0
1/25/2013	0	0	0	0
1/24/2013	0	0	0	0
1/23/2013	0	0	0	0
1/22/2013	0	0	0	0
1/21/2013	62.22	19	38.48	38.3
1/20/2013	446.57	133	527.27	526.38
1/19/2013	437.52	131	504.5	503.61
1/18/2013	172.92	52	323.3	322.58
1/17/2013	354.82	106	419.79	418.97
1/16/2013	257.69	77	297.84	297.4
1/15/2013	0	0	0	0
1/14/2013	493.32	147	433.49	433.05
1/13/2013	413.19	123	404.54	403.65
1/12/2013	423.26	126	448.98	448.09
1/11/2013	399.62	119	453.17	452.28
1/10/2013	466.48	139	458.82	457.93
1/9/2013	426.56	127	460.44	459.55
1/8/2013	433.68	129	474.3	473.41
1/7/2013	445.14	133	498.98	498.09
1/6/2013	468.96	140	503.38	502.49
1/5/2013	439.3	131	870.23	503.29
1/4/2013	439.5	131	676.13	432.34
1/3/2013	467.94	140	421.39	420.5
1/2/2013	447.72	134	457.05	456.16
1/1/2013	497.76	149	477.43	476.54
12/31/2012	357.43	81	498.7	497.75

WC 5-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
3/3/2013	645.45	76	663.06	662.3
3/2/2013	607.09	71	567.94	567.18
3/1/2013	342.18	40	642.07	418.78
2/28/2013	662.5	264	914.9	913.69
2/27/2013	704.55	281	1,114.76	1,113.25
2/26/2013	722.07	288	1,216.21	1,214.99
2/25/2013	1,009.33	403.00	1,274.78	1,129.93
2/24/2013	821.78	328	1,483.32	1,338.46
2/23/2013	817.35	326	1,301.52	1,300.30
2/22/2013	769.06	153	1,151.07	1,149.86
2/21/2013	762.8	152	1,148.40	1,147.18
2/20/2013	616.82	123	953.72	952.5
2/19/2013	566.12	113	856.74	855.53
2/18/2013	533.52	106	739.08	737.87
2/17/2013	426.83	85	590.6	589.39
2/16/2013	617.36	123	216.7	215.49
2/15/2013	455.88	91	765.38	764.16
2/14/2013	482.7	96	778.19	776.97
2/13/2013	629.71	126	785.36	784.14
2/12/2013	565.22	113	380.85	379.64
2/11/2013	551.35	110	835.11	833.89
2/10/2013	588.1	117	848.23	847.02
2/9/2013	534.3	107	918.96	917.75
2/8/2013	709.93	142	513.07	511.86
2/7/2013	572.7	114	875.94	685.64
2/6/2013	679.77	136	947.88	946.67
2/5/2013	653.1	130	977.9	976.68
2/4/2013	630.35	126	950.41	949.2
2/3/2013	492.5	98	850.18	848.96
2/2/2013	315.38	63	850.18	848.96
2/1/2013	663.69	132	846.42	845.12
1/31/2013	66.59	48	407.47	407.08
1/30/2013	441.5	317	397.61	397.22
1/29/2013	345.44	248	272.71	272.32
1/28/2013	0	0	0	0
1/27/2013	0	0	0	0
1/26/2013	0	0	0	0
1/25/2013	0	0	0	0
1/24/2013	0	0	0	0
1/23/2013	0	0	0	0
1/22/2013	0	0	0	0
1/21/2013	57.95	42	25.09	24.97
1/20/2013	415.91	299	343.74	343.16
1/19/2013	407.48	293	328.89	328.31
1/18/2013	276.08	198	361.31	360.5
1/17/2013	417.42	300	345.69	345.01
1/16/2013	240	172	194.17	193.88
1/15/2013	0	0	0	0
1/14/2013	459.45	330	282.6	282.31
1/13/2013	384.82	276	263.73	263.15
1/12/2013	394.2	283	292.69	292.11
1/11/2013	372.18	267	295.43	294.85
1/10/2013	434.46	312	299.11	298.53
1/9/2013	397.28	285	300.17	299.59
1/8/2013	403.91	290	309.2	308.62
1/7/2013	414.58	298	325.29	324.71
1/6/2013	436.77	314	328.16	327.58
1/5/2013	409.14	294	567.32	328.1
1/4/2013	409.33	294	440.78	281.85
1/3/2013	435.81	313	274.71	274.13
1/2/2013	416.98	299	297.96	297.38
1/1/2013	463.59	333	311.25	310.67
12/31/2012	932.16	221	551.77	550.72

WC 1-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
12/30/2012	370.67	118	402.27	401.47
12/29/2012	448.11	142	427.87	427.07
12/28/2012	304.23	96	442.36	441.57
12/27/2012	405.37	129	444.12	443.32
12/26/2012	413.64	131	433.92	433.12
12/25/2012	610.78	194	438.22	437.43
12/24/2012	363.74	115	394.1	393.3
12/23/2012	342.71	109	337.87	337.07
12/22/2012	376.18	119	509.63	269.1
12/21/2012	349.16	111	291.24	269.1
12/20/2012	187.57	59	239.42	6.05
12/19/2012	448.34	142	486.04	425.67
12/18/2012	442.01	140	574.74	398.24
12/17/2012	448.4	142	553.71	373.87
12/16/2012	477.55	151	263.32	0
12/15/2012	508.52	161	464.19	463.39
12/14/2012	444.32	141	566.14	565.34
12/13/2012	383.06	121	576.29	575.17
12/12/2012	370.59	118	623.23	622.11
12/11/2012	596.03	189	600.38	315.09
12/10/2012	499.49	158	586.05	431.21
12/9/2012	476.87	151	633.36	616.79
12/8/2012	520.5	165	748.53	659
12/7/2012	555.84	176	533.64	244.2
12/6/2012	575.05	182	669.52	441.89
12/5/2012	559.63	177	539.53	374.34
12/4/2012	484.96	154	452.24	74.87
12/3/2012	408.06	129	391.23	387.25
12/2/2012	692.96	220	726.39	635.75
12/1/2012	561.43	178	648.17	130.62
11/30/2012	1,352.78	239.00	524.68	523.88
11/29/2012	1,515.65	268.00	608.85	486.83
11/28/2012	1,143.11	202.00	374.02	373.25
11/27/2012	1,474.27	261.00	311.96	311.24
11/26/2012	1,435.38	254.00	722.89	389.24
11/25/2012	1,077.20	191.00	859.93	389.24
11/24/2012	1,264.12	224.00	999.85	65.81
11/23/2012	1,265.99	224.00	478.71	220.13
11/22/2012	1,392.75	246.00	1,037.22	554.07
11/21/2012	2,760.18	488.00	1,168.67	584.9
11/20/2012	1,569.21	278.00	658.85	59.9
11/19/2012	1,048.16	185.00	599.75	0
11/18/2012	1,717.08	304.00	623.07	0
11/17/2012	1,475.84	261.00	661.72	0
11/16/2012	1,236.09	219.00	657.89	0
11/15/2012	1,524.56	270.00	583.94	0
11/14/2012	1,397.07	247.00	624.99	0
11/13/2012	1,423.30	252.00	633.29	0
11/12/2012	1,094.24	194.00	722.89	72.03
11/11/2012	1,668.16	295.00	1,255.72	628.66
11/10/2012	1,501.14	266.00	1,449.46	751.8
11/9/2012	1,587.78	281.00	1,481.72	785.34
11/8/2012	1,778.94	315.00	1,865.37	722.57
11/7/2012	1,232.97	218.00	1,219.46	629.14
11/6/2012	1,180.89	209.00	1,310.50	493.69
11/5/2012	1,080.59	191.00	730.56	224.09
11/4/2012	1,101.94	195.00	1,089.13	573.71
11/3/2012	1,063.96	188.00	883.09	552.47
11/2/2012	1,585.69	281.00	1,194.39	620.03
11/1/2012	1,094.04	194.00	828.15	648.94
10/31/2012	627.52	941	959.18	367.58
10/30/2012	248.38	373	600.86	355.81
10/29/2012	502.61	754	427.97	0

WC 2-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
12/30/2012	276.7	62	482.15	481.2
12/29/2012	334.51	76	512.83	511.88
12/28/2012	227.1	51	530.21	529.25
12/27/2012	302.6	68	532.31	531.35
12/26/2012	308.77	70	520.09	519.13
12/25/2012	455.94	103	525.24	524.29
12/24/2012	271.52	61	472.36	471.4
12/23/2012	255.83	58	404.96	404
12/22/2012	280.81	63	610.84	322.53
12/21/2012	260.64	59	349.07	322.54
12/20/2012	140.02	32	286.97	7.26
12/19/2012	334.68	76	582.56	510.2
12/18/2012	329.95	74	688.87	477.32
12/17/2012	334.72	76	663.67	448.11
12/16/2012	356.48	80	315.6	0
12/15/2012	379.6	86	556.36	555.41
12/14/2012	331.67	75	678.56	677.6
12/13/2012	285.94	65	690.73	689.39
12/12/2012	276.64	62	746.99	745.65
12/11/2012	444.92	100	719.61	377.66
12/10/2012	372.86	84	702.42	516.84
12/9/2012	355.97	80	759.13	739.27
12/8/2012	388.54	88	897.17	789.87
12/7/2012	414.92	94	639.61	292.69
12/6/2012	429.26	97	802.47	529.63
12/5/2012	417.75	94	646.67	448.68
12/4/2012	362.01	82	542.05	89.74
12/3/2012	304.61	69	468.92	464.15
12/2/2012	517.28	117	870.63	761.99
12/1/2012	419.1	95	776.89	156.56
11/30/2012	464.47	198	864.26	862.94
11/29/2012	520.39	221	1,002.91	801.91
11/28/2012	392.48	167	616.09	614.82
11/27/2012	506.18	215	513.87	512.67
11/26/2012	492.83	210	1,190.75	641.16
11/25/2012	369.85	157	1,416.49	641.16
11/24/2012	434.03	185	1,646.96	108.39
11/23/2012	434.67	185	788.54	362.59
11/22/2012	478.19	203	1,708.52	912.67
11/21/2012	947.69	403	1,925.04	963.44
11/20/2012	538.78	229	1,085.25	98.66
11/19/2012	359.88	153	987.91	0
11/18/2012	589.55	251	1,026.32	0
11/17/2012	506.72	216	1,089.99	0
11/16/2012	424.4	181	1,083.68	0
11/15/2012	523.45	223	961.86	0
11/14/2012	479.68	204	1,029.48	0
11/13/2012	488.68	208	1,043.16	0
11/12/2012	375.7	160	1,190.75	118.66
11/11/2012	572.75	244	2,068.43	1,035.53
11/10/2012	515.41	219	2,387.56	1,238.38
11/9/2012	545.16	232	2,440.70	1,293.62
11/8/2012	610.79	260	3,072.65	1,190.23
11/7/2012	423.33	180	2,008.71	1,036.32
11/6/2012	405.45	173	2,158.67	813.22
11/5/2012	371.01	158	1,203.38	369.12
11/4/2012	378.34	161	1,794.02	945.03
11/3/2012	365.3	155	1,454.64	910.04
11/2/2012	544.44	232	1,967.40	1,021.32
11/1/2012	375.63	160	1,364.13	1,068.94
10/31/2012	830.15	231	1,293.16	495.57
10/30/2012	328.59	92	810.08	479.7
10/29/2012	664.91	185	576.99	0

WC 5-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
12/30/2012	721.62	171	533.46	532.4
12/29/2012	872.38	207	567.4	566.35
12/28/2012	592.28	141	586.63	585.57
12/27/2012	789.16	187	588.95	587.89
12/26/2012	805.26	191	575.43	574.38
12/25/2012	1,189.07	282.00	581.13	580.08
12/24/2012	708.13	168	522.62	521.56
12/23/2012	667.19	158	448.05	446.99
12/22/2012	732.34	174	675.84	356.86
12/21/2012	679.73	161	386.22	356.86
12/20/2012	365.16	87	317.5	8.03
12/19/2012	872.82	207	644.55	564.49
12/18/2012	860.5	204	762.17	528.11
12/17/2012	872.94	207	734.29	495.79
12/16/2012	929.69	221	349.19	0
12/15/2012	989.98	235	615.57	614.51
12/14/2012	864.99	205	750.76	749.71
12/13/2012	745.73	177	764.24	762.75
12/12/2012	721.46	171	826.48	824.99
12/11/2012	1,160.34	276.00	796.18	417.84
12/10/2012	972.4	231	777.17	571.84
12/9/2012	928.36	220	839.91	817.94
12/8/2012	1,013.31	241.00	992.64	873.92
12/7/2012	1,082.10	257.00	707.67	323.84
12/6/2012	1,119.49	266.00	887.86	585.99
12/5/2012	1,089.48	259.00	715.49	496.43
12/4/2012	944.12	224	599.72	99.29
12/3/2012	794.41	189	518.82	513.54
12/2/2012	1,349.05	320.00	963.28	843.08
12/1/2012	1,092.99	260.00	859.56	173.22
11/30/2012	0	0	0	0
11/29/2012	0	0	0	0
11/28/2012	122.71	8	99.59	99.39
11/27/2012	369.27	24	193.82	193.37
11/26/2012	0	0	0	0
11/25/2012	0	0	0	0
11/24/2012	0	0	0	0
11/23/2012	0	0	0	0
11/22/2012	0	0	0	0
11/21/2012	0	0	0	0
11/20/2012	0	0	0	0
11/19/2012	0	0	0	0
11/18/2012	0	0	0	0
11/17/2012	0	0	0	0
11/16/2012	0	0	0	0
11/15/2012	0	0	0	0
11/14/2012	0	0	0	0
11/13/2012	0	0	0	0
11/12/2012	0	0	0	0
11/11/2012	0	0	0	0
11/10/2012	0	0	0	0
11/9/2012	0	0	0	0
11/8/2012	0	0	0	0
11/7/2012	0	0	0	0
11/6/2012	0	0	0	0
11/5/2012	0	0	0	0
11/4/2012	0	0	0	0
11/3/2012	0	0	0	0
11/2/2012	0	0	0	0
11/1/2012	0	0	0	0
10/31/2012	18.3	0	404.47	155
10/30/2012	0	0	0	0
10/29/2012	0	0	0	0

WC 1-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
10/28/2012	495.14	743	437.91	0
10/27/2012	562.23	843	908.48	0
10/26/2012	586.27	879	434.7	0
10/25/2012	250.19	375	42.23	0
10/24/2012	0	0	0	0
10/23/2012	0	0	0	0
10/22/2012	0	0	0	0
10/21/2012	0	0	0	0
10/20/2012	0	0	0	0
10/19/2012	0	0	0	0
10/18/2012	0	0	0	0
10/17/2012	0	0	0	0
10/16/2012	0	0	0	0
10/15/2012	0	0	0	0
10/14/2012	0	0	0	0
10/13/2012	0	0	0	0
10/12/2012	0	0	0	0
10/11/2012	0	0	0	0
10/10/2012	0	0	0	0
10/9/2012	2.65	4	5	0
10/8/2012	890.64	1336	4.38	0

Totals	129,554.3	60,957.0	172,183.2	115,965.0
Daily AVG	386.7	182.0	514.0	346.2
Daily MAX	2,760.2	1,336.0	1,947.1	1,514.5

First 30 Days	Oil Prod (bbls)	Water Prod (bbls)	Gas Sales (mcfd)	Water Prod (bbls)
Daily AVG	1,201.8	357.0	852.3	294.8
0.6 Decline Factor	721.1	214.2	511.4	176.9

	Oil Prod (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Water Prod (bbls)
AVG Last 30 Days	205.6	156.2	238.6	115.9
0.6 Decline Factor	123.3	93.7	143.2	69.5

WC 2-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
10/28/2012	655.04	183	590.38	0
10/27/2012	743.78	207	1,224.81	0
10/26/2012	775.58	216	586.06	0
10/25/2012	756.52	211	130.12	0
10/24/2012	1,017.57	284.00	3.18	0
10/23/2012	861.34	240	3.18	0
10/22/2012	0	0	0	0
10/21/2012	0	0	0	0
10/20/2012	0	0	0	0
10/19/2012	0	0	0	0
10/18/2012	0	0	0	0
10/17/2012	0	0	0	0
10/16/2012	0	0	0	0
10/15/2012	0	0	0	0
10/14/2012	223.14	62	5	0
10/13/2012	2,220.70	619.00	5	0
10/12/2012	927.68	259	4.17	0
10/11/2012	0	0	0	0
10/10/2012	0	0	0	0
10/9/2012	0	0	0	0
10/8/2012	0	0	0	0
10/7/2012	0	0	0	0
10/6/2012	0	0	0	0
10/5/2012	0	0	0	0
10/4/2012	0	0	0	0
10/3/2012	0	0	0	0
10/2/2012	0	0	0	0
10/1/2012	0	0	0	0
9/30/2012	0	0	0	0
9/29/2012	73.86	23	202.75	0
9/28/2012	77.38	24	228.13	0
9/27/2012	39.49	12	166.39	0

Totals	115,389.4	53,333.0	199,949.2	122,250.6
Daily AVG	333.5	154.1	577.9	353.3
Daily MAX	2,220.7	619.0	3,072.7	1,293.6

First 30 Days	Oil Prod (bbls)	Water Prod (bbls)	Gas Sales (mcfd)	Water Prod (bbls)
Daily AVG	565.9	208.4	1,285.4	435.9
0.6 Decline Factor	339.5	125.0	771.2	261.6

	Oil Prod (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Water Prod (bbls)
AVG Last 30 Days	231.9	334.3	341.9	164.8
0.6 Decline Factor	139.2	200.6	205.2	98.9

WC 5-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
10/28/2012	0	0	0	0
10/27/2012	0	0	0	0
10/26/2012	0	0	0	0
10/25/2012	0	0	0	0
10/24/2012	0	0	0	0
10/23/2012	0	0	0	0
10/22/2012	0	0	0	0
10/21/2012	0	0	0	0
10/20/2012	0	0	0	0
10/19/2012	0	0	0	0
10/18/2012	0	0	0	0
10/17/2012	0	0	0	0
10/16/2012	0	0	0	0
10/15/2012	0	0	0	0
10/14/2012	0	0	0	0
10/13/2012	0	0	0	0
10/12/2012	0	0	0	0
10/11/2012	0	0	0	0
10/10/2012	0	0	0	0
10/9/2012	0	0	0	0
10/8/2012	8.66	0	0.62	0
10/7/2012	789.82	0	1.04	0

Totals	156,774.8	119,416.0	193,608.8	129,056.9
Daily AVG	466.6	355.4	576.2	384.1
Daily MAX	2,247.8	3,930.0	2,913.5	2,541.2

First 30 Days	Oil Prod (bbls)	Water Prod (bbls)	Gas Sales (mcfd)	Water Prod (bbls)
Daily AVG	884.2	209.9	663.0	512.5
0.6 Decline Factor	530.5	125.9	397.8	307.5

	Oil Prod (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Water Prod (bbls)
AVG Last 30 Days	795.8	405.8	1,269.8	620.5
0.6 Decline Factor	477.5	243.5	761.9	372.3

WC 100-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
9/7/2013	150.2	55	160.28	82.06
9/6/2013	216.39	79	257.6	149.59
9/5/2013	241.07	88	285.44	161.62
9/4/2013	277.51	101	285.85	134.55
9/3/2013	274.39	100	283.62	114.94
9/2/2013	289.43	106	255.63	38.68
9/1/2013	181.18	66	185.85	100.18
8/31/2013	26.07	10	31.21	24.47
8/30/2013	293.62	107	328.47	145.14
8/29/2013	279.04	102	311.84	1.78
8/28/2013	270.42	99	314.23	92.64
8/27/2013	286.79	105	315.73	200.82
8/26/2013	284.85	104	317.25	250.81
8/25/2013	286.4	105	320.86	235.81
8/24/2013	294.25	107	316.78	74.18
8/23/2013	296.5	108	312.03	104.62
8/22/2013	307.93	112	302.01	178.06
8/21/2013	296.02	108	298.6	88.23
8/20/2013	283.9	104	297.22	117.53
8/19/2013	301.29	110	296.6	239.7
8/18/2013	283.68	104	296.76	257.49
8/17/2013	284.9	104	296.81	164.14
8/16/2013	277.99	102	292.93	216.69
8/15/2013	269.97	99	225.48	106.08
8/14/2013	225.7	82	273.14	0.31
8/13/2013	319.4	117	260.21	3.11
8/12/2013	148.55	54	167.59	135.78
8/11/2013	0	0	0	0
8/10/2013	46.71	17	41.88	20.2
8/9/2013	0	0	0	0
8/8/2013	0	0	0	0
8/7/2013	0	0	0	0
8/6/2013	279.86	105	264.31	103.36
8/5/2013	0	0	0	0
8/4/2013	0	0	0	0
8/3/2013	0	0	0	0
8/2/2013	0	0	0	0
8/1/2013	0	0	0	0
7/31/2013	0	0	0	0
7/30/2013	332.37	164	436.72	147.28
7/29/2013	307.45	150	419.36	159.68
7/28/2013	302.74	149	442.02	179.35
7/27/2013	295.53	146	426.53	163.39
7/26/2013	321.77	159	411.34	151.23
7/25/2013	287.58	142	417.94	332.59
7/24/2013	246.49	121	366.81	318.06
7/23/2013	322.49	159	328.3	279.2
7/22/2013	349.89	172	572.01	235.72
7/21/2013	329.39	162	459.26	0.18
7/20/2013	323.96	160	424.2	0.25
7/19/2013	320.43	158	483.74	36.6
7/18/2013	352.54	174	472.31	217.1
7/17/2013	320.85	158	427.68	287.97
7/16/2013	310.25	153	325.35	163.79
7/15/2013	302.36	149	163.92	110.24
7/14/2013	267.23	132	364.91	177.19
7/13/2013	245.76	121	347.43	177.52
7/12/2013	253.73	125	354.43	178.22
7/11/2013	233.14	115	330.26	199.31
7/10/2013	257.08	127	358.58	282.68
7/9/2013	254.31	125	356.35	306.76
7/8/2013	260.85	129	361.83	301.63
7/7/2013	260.94	129	367.85	238.73

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Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
9/7/2013	0	0	0	0
9/6/2013	0	0	0	0
9/5/2013	0	0	0	0
9/4/2013	0	0	0	0
9/3/2013	0	0	0	0
9/2/2013	0	0	0	0
9/1/2013	0	0	0	0
8/31/2013	0	0	0	0
8/30/2013	0	0	0	0
8/29/2013	0	0	0	0
8/28/2013	0	0	0	0
8/27/2013	0	0	0	0
8/26/2013	0	0	0	0
8/25/2013	0	0	0	0
8/24/2013	0	0	0	0
8/23/2013	0	0	0	0
8/22/2013	0	0	0	0
8/21/2013	0	0	0	0
8/20/2013	0	0	0	0
8/19/2013	0	0	0	0
8/18/2013	0	0	0	0
8/17/2013	0	0	0	0
8/16/2013	0	0	0	0
8/15/2013	0	0	0	0
8/14/2013	0	0	0	0
8/13/2013	0	0	0	0
8/12/2013	0	0	0	0
8/11/2013	0	0	0	0
8/10/2013	0	0	0	0
8/9/2013	0	0	0	0
8/8/2013	0	0	0	0
8/7/2013	0	0	0	0
8/6/2013	0	0	0	0
8/5/2013	0	0	0	0
8/4/2013	0	0	0	0
8/3/2013	0	0	0	0
8/2/2013	0	0	0	0
8/1/2013	0	0	0	0
7/31/2013	0	0	0	0
7/30/2013	0	0	0	0
7/29/2013	0	0	0	0
7/28/2013	0	0	0	0
7/27/2013	0	0	0	0
7/26/2013	0	0	0	0
7/25/2013	0	0	0	0
7/24/2013	0	0	0	0
7/23/2013	0	0	0	0
7/22/2013	0	0	0	0
7/21/2013	0	0	0	0
7/20/2013	0	0	0	0
7/19/2013	0	0	0	0
7/18/2013	0	0	0	0
7/17/2013	0	0	0	0
7/16/2013	0	0	0	0
7/15/2013	0	0	0	0
7/14/2013	0	0	0	0
7/13/2013	0	0	0	0
7/12/2013	0	0	0	0
7/11/2013	371.39	106	555.99	335.53
7/10/2013	0	0	0	0
7/9/2013	0	0	0	0
7/8/2013	0	0	0	0
7/7/2013	0	0	0	0

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Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
7/6/2013	273.85	135	376.89	306.28
7/5/2013	278.54	137	388.34	288.53
7/4/2013	286.36	141	382.91	301.19
7/3/2013	293.22	143	384.04	290.94
7/2/2013	297.97	147	384.19	294.4
7/1/2013	305.02	150	271.96	162.67
6/30/2013	200.8	77	766.83	458.94
6/29/2013	196.4	75	749.96	700.2
6/28/2013	181.53	70	663.86	534.78
6/27/2013	190.38	73	786.44	745.15
6/26/2013	171.39	66	977.74	900.26
6/25/2013	186.5	71	937.92	869.13
6/24/2013	184.57	71	905.14	904.1
6/23/2013	187.15	72	945.76	516.38
6/22/2013	193.27	74	852.49	755.72
6/21/2013	139.57	53	588.54	370.62
6/20/2013	152.59	58	586.83	419.13
6/19/2013	249.74	96	902.88	183.83
6/18/2013	212.04	81	916.24	412.02
6/17/2013	203.84	78	535	301.98
6/16/2013	203.72	78	1,018.03	513.96
6/15/2013	219.3	84	816.76	448.52
6/14/2013	300.05	115	893.38	519.35
6/13/2013	245.99	94	1,046.38	481.76
6/12/2013	212.72	82	793.45	409.76
6/11/2013	229.81	88	1,063.29	471.32
6/10/2013	128.18	49	777.97	52.84
6/9/2013	272.36	104	325.02	162.19
6/8/2013	118.36	45	495.04	441.24
6/7/2013	153.73	59	587.71	382.32
6/6/2013	158.54	61	587.92	523.7
6/5/2013	137.88	53	613.08	583.62
6/4/2013	146.59	56	613.75	585.08
6/3/2013	113.22	43	413.06	288.61
6/2/2013	112.49	43	419.33	418.32
6/1/2013	155.65	64	493.23	191.7
5/31/2013	210.26	81	594.59	576.76
5/30/2013	581.33	223	608.05	387.75
5/29/2013	310.14	119	659.45	509.32
5/28/2013	178.72	68	565.88	519.56
5/27/2013	198.97	76	533.17	351.04
5/26/2013	525.72	201	654.3	169.54
5/25/2013	234.44	90	657.63	445.35
5/24/2013	203	78	712.03	483.71
5/23/2013	478.29	183	958.8	673.94
5/22/2013	507.24	194	764.68	734.99
5/21/2013	878.08	336	769.73	736.33
5/20/2013	615.78	236	824.19	725.35
5/19/2013	0	0	0	0
5/18/2013	0	0	0	0
5/17/2013	0	0	0	0
5/16/2013	0	0	0	0
5/15/2013	0	0	0	0
5/14/2013	0	0	0	0
5/13/2013	0	0	0	0
5/12/2013	0	0	0	0
5/11/2013	0	0	0	0
5/10/2013	0	0	0	0
5/9/2013	0	0	0	0
5/8/2013	78.17	30	43.95	0
5/7/2013	347.7	133	918.09	0.52
5/6/2013	137.98	53	292.38	59.68

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Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
7/6/2013	0	0	0	0
7/5/2013	110.93	32	163.44	121.44
7/4/2013	456.17	130	644.63	507.05
7/3/2013	464	132	646.53	489.8
7/2/2013	474.66	135	646.78	495.62
7/1/2013	485.88	138	457.84	273.86
6/30/2013	316.22	90	766.83	458.94
6/29/2013	309.28	88	749.96	700.2
6/28/2013	166.49	47	387.25	311.96
6/27/2013	12.49	4	32.77	31.05
6/26/2013	0	0	0	0
6/25/2013	0	0	0	0
6/24/2013	0	0	0	0
6/23/2013	0	0	0	0
6/22/2013	0	0	0	0
6/21/2013	219.79	63	588.54	370.62
6/20/2013	240.29	68	586.83	419.13
6/19/2013	393.28	112	902.88	183.83
6/18/2013	333.12	95	916.24	412.02
6/17/2013	321	91	535	301.98
6/16/2013	320.81	91	1,018.03	513.96
6/15/2013	345.34	98	816.76	448.52
6/14/2013	472.52	135	893.38	519.35
6/13/2013	387.38	110	1,046.38	481.76
6/12/2013	334.99	95	793.45	409.76
6/11/2013	361.9	103	1,063.29	471.32
6/10/2013	201.85	58	777.97	52.84
6/9/2013	428.91	122	325.02	162.19
6/8/2013	186.38	53	495.04	441.24
6/7/2013	141.22	40	342.83	223.02
6/6/2013	0	0	0	0
6/5/2013	0	0	0	0
6/4/2013	0	0	0	0
6/3/2013	0	0	0	0
6/2/2013	0	0	0	0
6/1/2013	245.11	75	493.23	191.7
5/31/2013	331.11	94	594.59	576.76
5/30/2013	915.46	261	608.05	387.75
5/29/2013	488.41	139	659.45	509.32
5/28/2013	281.44	80	565.88	519.56
5/27/2013	313.33	89	533.17	351.04
5/26/2013	827.89	236	654.3	169.54
5/25/2013	368.62	105	657.63	445.35
5/24/2013	186.48	53	415.35	282.16
5/23/2013	0	0	0	0
5/22/2013	0	0	0	0
5/21/2013	0	0	0	0
5/20/2013	0	0	0	0
5/19/2013	0	0	0	0
5/18/2013	0	0	0	0
5/17/2013	519.08	148	945.12	657.86
5/16/2013	478.22	136	945.12	89.18
5/15/2013	448.84	128	1,334.79	706.03
5/14/2013	434.1	123	1,940.87	749.32
5/13/2013	466.76	133	846.22	838.92
5/12/2013	628.5	179	907.11	546.03
5/11/2013	664.5	189	859.81	270.96
5/10/2013	302.4	86	599.91	154.26
5/9/2013	0	0	0	0
5/8/2013	0	0	0	0
5/7/2013	0	0	0	0
5/6/2013	0	0	0	0

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Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
5/5/2013	0	0	0	0
5/4/2013	0	0	0	0
5/3/2013	0	0	0	0
5/2/2013	0	0	0	0
5/1/2013	0	0	0	0
4/30/2013	0	0	0	0
4/29/2013	0	0	0	0
4/28/2013	107.47	41	180.3	5.24
4/27/2013	309.68	119	365.2	13.71
4/26/2013	382.7	147	480.45	64.61
4/25/2013	314.82	121	936.4	48.74
4/24/2013	278.82	107	726.44	7.92
4/23/2013	257.47	99	778.62	10.78
4/22/2013	234.22	90	851.7	14.53
4/21/2013	229.14	88	459.15	1.63
4/20/2013	0	0	0	0
4/19/2013	0	0	0	0
4/18/2013	0	0	0	0
4/17/2013	0	0	0	0
4/16/2013	0	0	0	0
4/15/2013	0	0	0	0
4/14/2013	0	0	0	0
4/13/2013	0	0	0	0
4/12/2013	0	0	0	0
4/11/2013	0	0	0	0
4/10/2013	0	0	0	0
4/9/2013	0	0	0	0
4/8/2013	0	0	0	0
4/7/2013	0	0	0	0
4/6/2013	0	0	2.5	0
4/5/2013	0	0	2.5	0
4/4/2013	0	0	144.5	142
4/3/2013	287.48	110	144.5	142
4/2/2013	206.26	79	584.58	582.7
4/1/2013	271.89	104	559.9	557.4
3/31/2013	173.19	98	430.41	428.85
3/30/2013	145.96	83	454.64	453.09
3/29/2013	249.72	142	458.68	457.13
3/28/2013	204.08	116	449.95	448.4
3/27/2013	245.27	139	435.94	434.38
3/26/2013	192.35	109	435.81	434.26
3/25/2013	238.58	135	507.16	505.61
3/24/2013	248.97	141	448.74	447.19
3/23/2013	226.25	128	452.47	450.92
3/22/2013	223.38	127	460.55	459
3/21/2013	236.44	134	544.92	543.37
3/20/2013	195.51	111	416.49	415.57
3/19/2013	202.39	115	426.36	425.69
3/18/2013	158.18	90	379.09	378.53
3/17/2013	249.11	141	431.61	431.05
3/16/2013	223.82	127	456.71	456.15
3/15/2013	220.81	125	471.22	470.66
3/14/2013	203.77	115	493.93	493.37
3/13/2013	256.42	145	513.94	513.38
3/12/2013	240.97	137	522.49	521.93
3/11/2013	203.85	116	509.11	508.55
3/10/2013	228.76	130	478.53	477.97
3/9/2013	272.66	155	305.42	304.86
3/8/2013	271.19	154	507.9	507.33
3/7/2013	177.78	101	424.43	423.87
3/6/2013	290.79	165	560.59	560.03
3/5/2013	296.78	168	515.01	514.45
3/4/2013	277.04	157	441.23	440.67

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Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
5/5/2013	0	0	0	0
5/4/2013	0	0	0	0
5/3/2013	0	0	0	0
5/2/2013	0	0	0	0
5/1/2013	0	0	0	0
4/30/2013	0	0	0	0
4/29/2013	0	0	0	0
4/28/2013	0	0	0	0
4/27/2013	0	0	0	0
4/26/2013	0	0	0	0
4/25/2013	0	0	0	0
4/24/2013	0	0	0	0
4/23/2013	0	0	0	0
4/22/2013	0	0	0	0
4/21/2013	0	0	0	0
4/20/2013	0	0	0	0
4/19/2013	0	0	0	0
4/18/2013	0	0	0	0
4/17/2013	0	0	0	0
4/16/2013	0	0	0	0
4/15/2013	323.6	92	252.19	169.05
4/14/2013	244.03	70	229.95	106.38
4/13/2013	286.98	82	115.41	79.98
4/12/2013	0	0	0	0
4/11/2013	0	0	0	0
4/10/2013	0	0	0	0
4/9/2013	0	0	0	0
4/8/2013	0	0	0	0
4/7/2013	0	0	0	0
4/6/2013	0	0	0	0
4/5/2013	0	0	0	0
4/4/2013	0	0	0	0
4/3/2013	0	0	0	0
4/2/2013	324.82	93	584.58	582.7
4/1/2013	428.16	122	559.9	557.4
3/31/2013	431	253	954.6	951.15
3/30/2013	363.22	213	1,008.36	1,004.91
3/29/2013	621.44	364	1,017.32	1,013.87
3/28/2013	507.88	298	997.95	994.5
3/27/2013	610.38	358	966.86	963.42
3/26/2013	478.69	281	966.59	963.14
3/25/2013	593.74	348	1,124.84	1,121.39
3/24/2013	619.58	363	995.26	991.81
3/23/2013	563.04	330	1,003.53	1,000.09
3/22/2013	555.9	326	1,021.45	1,018.01
3/21/2013	588.41	345	1,208.58	1,205.13
3/20/2013	486.56	285	923.74	921.68
3/19/2013	503.67	295	945.61	944.14
3/18/2013	393.66	231	840.78	839.53
3/17/2013	619.93	364	957.26	956.01
3/16/2013	557	327	1,012.95	1,011.70
3/15/2013	549.51	322	1,045.11	1,043.87
3/14/2013	507.1	297	1,095.49	1,094.24
3/13/2013	638.14	374	1,139.88	1,138.63
3/12/2013	599.67	352	1,158.83	1,157.58
3/11/2013	507.29	297	1,129.15	1,127.91
3/10/2013	569.3	334	1,061.32	1,060.08
3/9/2013	678.55	398	677.39	676.15
3/8/2013	674.89	396	1,126.46	1,125.21
3/7/2013	442.43	259	941.35	940.1
3/6/2013	723.65	424	1,243.34	1,242.09
3/5/2013	738.58	433	1,142.24	1,141.00
3/4/2013	689.45	404	978.61	977.36

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Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
3/3/2013	274.45	156	488.97	488.41
3/2/2013	258.14	146	418.82	418.26
3/1/2013	145.5	82	473.49	308.83
2/28/2013	656.68	290	747.61	746.61
2/27/2013	0	0	0	0
2/26/2013	715.73	316	993.82	992.82
2/25/2013	1,000.46	442.00	1,041.68	923.31
2/24/2013	814.57	360	1,212.08	1,093.71
2/23/2013	810.18	358	1,063.53	1,062.53
2/22/2013	762.3	168	940.59	939.6
2/21/2013	756.1	167	938.41	937.41
2/20/2013	611.4	135	779.32	778.33
2/19/2013	561.15	124	700.08	699.09
2/18/2013	528.84	117	603.94	602.94
2/17/2013	423.08	93	482.61	481.62
2/16/2013	611.93	135	177.08	176.08
2/15/2013	451.88	100	625.43	624.43
2/14/2013	478.46	106	635.89	634.9
2/13/2013	624.18	138	641.75	640.76
2/12/2013	560.26	124	311.21	310.22
2/11/2013	546.51	121	682.41	681.41
2/10/2013	582.94	129	693.13	692.14
2/9/2013	529.61	117	750.92	749.93
2/8/2013	703.69	155	419.25	418.26
2/7/2013	567.68	125	715.77	560.26
2/6/2013	673.8	149	774.56	773.56
2/5/2013	647.37	143	799.09	798.09
2/4/2013	624.82	138	776.62	775.63
2/3/2013	488.18	108	694.72	693.73
2/2/2013	312.61	69	694.72	693.73
2/1/2013	438.58	97	461.1	460.39
1/31/2013	106.3	31	362.3	361.95
1/30/2013	704.71	202	353.53	353.18
1/29/2013	551.37	158	242.48	242.13
1/28/2013	0	0	0	0
1/27/2013	0	0	0	0
1/26/2013	0	0	0	0
1/25/2013	0	0	0	0
1/24/2013	0	0	0	0
1/23/2013	0	0	0	0
1/22/2013	0	0	0	0
1/21/2013	92.5	27	22.31	22.2
1/20/2013	663.85	191	305.63	305.12
1/19/2013	650.4	187	292.43	291.91
1/18/2013	257.06	74	187.4	186.98
1/17/2013	527.46	151	243.33	242.85
1/16/2013	383.07	110	172.64	172.38
1/15/2013	0	0	0	0
1/14/2013	733.35	211	251.27	251.01
1/13/2013	614.24	176	234.49	233.97
1/12/2013	629.2	181	260.25	259.73
1/11/2013	594.06	171	262.68	262.17
1/10/2013	693.46	199	265.95	265.44
1/9/2013	634.11	182	266.89	266.37
1/8/2013	644.7	185	274.93	274.41
1/7/2013	661.73	190	289.23	288.72
1/6/2013	697.15	200	291.78	291.26
1/5/2013	653.05	188	504.42	291.73
1/4/2013	653.35	188	391.92	250.6
1/3/2013	695.62	200	244.26	243.74
1/2/2013	665.56	191	264.93	264.41
1/1/2013	739.96	212	276.74	276.22
12/31/2012	646.75	77	386.08	385.34

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Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
3/3/2013	682.99	401	1,084.49	1,083.24
3/2/2013	642.41	377	928.91	927.66
3/1/2013	362.09	212	1,050.15	684.95
2/28/2013	417.59	137	600.94	600.14
2/27/2013	444.1	145	732.21	731.22
2/26/2013	455.14	149	798.84	798.05
2/25/2013	636.21	208	837.32	742.17
2/24/2013	517.99	169	974.29	879.14
2/23/2013	515.2	169	854.88	854.08
2/22/2013	484.76	159	756.06	755.26
2/21/2013	480.82	157	754.3	753.51
2/20/2013	388.8	127	626.43	625.63
2/19/2013	356.84	117	562.74	561.94
2/18/2013	336.29	110	485.45	484.66
2/17/2013	269.04	88	387.93	387.13
2/16/2013	389.14	127	142.34	141.54
2/15/2013	287.35	94	502.73	501.93
2/14/2013	304.26	100	511.14	510.34
2/13/2013	396.92	130	515.85	515.05
2/12/2013	356.28	117	250.16	249.36
2/11/2013	347.53	114	548.53	547.73
2/10/2013	370.7	121	557.15	556.35
2/9/2013	336.78	110	603.6	602.81
2/8/2013	447.49	146	337	336.2
2/7/2013	360.99	118	575.35	450.35
2/6/2013	428.48	140	622.6	621.8
2/5/2013	411.67	135	642.32	641.52
2/4/2013	397.33	130	624.26	623.46
2/3/2013	310.44	102	558.43	557.63
2/2/2013	198.8	65	558.43	557.63
2/1/2013	418.34	137	555.96	555.1
1/31/2013	47.6	36	719.06	718.38
1/30/2013	315.56	238	701.66	700.98
1/29/2013	246.9	186	481.25	480.57
1/28/2013	0	0	0	0
1/27/2013	0	0	0	0
1/26/2013	0	0	0	0
1/25/2013	0	0	0	0
1/24/2013	0	0	0	0
1/23/2013	0	0	0	0
1/22/2013	0	0	0	0
1/21/2013	41.42	31	44.27	44.06
1/20/2013	297.27	224	606.6	605.57
1/19/2013	291.24	219	580.39	579.37
1/18/2013	197.33	149	637.61	636.18
1/17/2013	298.35	225	610.03	608.84
1/16/2013	171.54	129	342.65	342.14
1/15/2013	0	0	0	0
1/14/2013	328.39	247	498.71	498.2
1/13/2013	275.05	207	465.4	464.38
1/12/2013	281.75	212	516.52	515.5
1/11/2013	266.02	200	521.35	520.33
1/10/2013	310.52	234	527.84	526.82
1/9/2013	283.95	214	529.7	528.68
1/8/2013	288.69	217	545.65	544.63
1/7/2013	296.32	223	574.05	573.02
1/6/2013	312.18	235	579.1	578.08
1/5/2013	292.43	220	1,001.14	579
1/4/2013	292.56	220	777.85	497.38
1/3/2013	311.49	235	484.79	483.76
1/2/2013	298.03	225	525.81	524.79
1/1/2013	331.35	250	549.26	548.23
12/31/2012	420.62	193	759.37	757.91

WC 100-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
12/30/2012	500.67	59	373.26	372.52
12/29/2012	605.27	72	397.02	396.28
12/28/2012	410.93	49	410.47	409.73
12/27/2012	547.53	65	412.09	411.35
12/26/2012	558.7	66	402.63	401.89
12/25/2012	824.99	98	406.62	405.88
12/24/2012	491.31	58	365.68	364.94
12/23/2012	462.91	55	313.5	312.76
12/22/2012	508.11	60	472.89	249.69
12/21/2012	471.61	56	270.24	249.7
12/20/2012	253.35	30	222.16	5.62
12/19/2012	605.58	72	451	394.98
12/18/2012	597.03	71	533.3	369.52
12/17/2012	605.66	72	513.79	346.91
12/16/2012	645.04	76	244.33	0
12/15/2012	686.86	81	430.72	429.98
12/14/2012	600.14	71	525.31	524.58
12/13/2012	517.4	61	534.74	533.7
12/12/2012	500.56	59	578.29	577.25
12/11/2012	805.06	95	557.09	292.37
12/10/2012	674.67	80	543.79	400.12
12/9/2012	644.11	76	587.69	572.32
12/8/2012	703.05	83	694.56	611.49
12/7/2012	750.78	89	495.16	226.59
12/6/2012	776.72	92	621.24	410.02
12/5/2012	755.9	90	500.63	347.35
12/4/2012	655.04	78	419.63	69.47
12/3/2012	551.17	65	363.02	359.32
12/2/2012	935.99	111	674.01	589.91
12/1/2012	758.33	90	601.44	121.2
11/30/2012	1,018.98	250.00	1,896.06	1,893.18
11/29/2012	1,141.66	280.00	2,200.24	1,759.27
11/28/2012	861.04	212	1,351.61	1,348.84
11/27/2012	1,110.49	273.00	1,127.35	1,124.73
11/26/2012	1,081.20	266.00	2,612.35	1,406.61
11/25/2012	811.4	199	3,107.58	1,406.61
11/24/2012	952.19	234	3,613.20	237.8
11/23/2012	953.6	234	1,729.95	795.48
11/22/2012	1,049.08	258.00	3,748.26	2,002.27
11/21/2012	2,079.10	511.00	4,223.28	2,113.66
11/20/2012	1,182.00	290.00	2,380.90	216.45
11/19/2012	789.52	194	2,167.34	0
11/18/2012	1,293.38	318.00	2,251.61	0
11/17/2012	1,111.67	273.00	2,391.29	0
11/16/2012	931.08	229	2,377.44	0
11/15/2012	1,148.37	282.00	2,110.20	0
11/14/2012	1,052.34	259.00	2,258.54	0
11/13/2012	1,072.10	263.00	2,288.55	0
11/12/2012	824.23	203	2,612.35	260.31
11/11/2012	1,256.53	309.00	4,537.85	2,271.81
11/10/2012	1,130.73	278.00	5,237.98	2,716.82
11/9/2012	1,195.99	294.00	5,354.57	2,838.03
11/8/2012	1,339.98	329.00	6,740.98	2,611.20
11/7/2012	928.73	228	4,406.83	2,273.54
11/6/2012	889.5	219	4,735.83	1,784.09
11/5/2012	813.95	200	2,640.06	809.79
11/4/2012	830.03	204	3,935.84	2,073.26
11/3/2012	801.42	197	3,191.27	1,996.49
11/2/2012	1,194.41	293.00	4,316.21	2,240.64
11/1/2012	824.09	202	2,992.72	2,345.11
10/31/2012	690.27	285	741.92	284.32
10/30/2012	273.22	113	464.76	275.22
10/29/2012	552.87	228	331.04	0

WC 102-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
12/30/2012	325.62	149	734.16	732.71
12/29/2012	393.65	180	780.88	779.43
12/28/2012	267.26	123	807.34	805.88
12/27/2012	356.1	163	810.54	809.08
12/26/2012	363.36	167	791.93	790.48
12/25/2012	536.55	246	799.78	798.33
12/24/2012	319.53	146	719.25	717.79
12/23/2012	301.06	138	616.62	615.17
12/22/2012	330.45	151	930.11	491.12
12/21/2012	306.72	141	531.53	491.12
12/20/2012	164.77	76	436.96	11.05
12/19/2012	393.85	181	887.05	776.87
12/18/2012	388.29	178	1,048.93	726.81
12/17/2012	393.9	181	1,010.55	682.33
12/16/2012	419.51	192	480.57	0
12/15/2012	446.71	205	847.17	845.71
12/14/2012	390.31	179	1,033.23	1,031.78
12/13/2012	0	0	0	0
12/12/2012	0	0	0	0
12/11/2012	523.58	240	1,095.73	575.05
12/10/2012	438.78	201	1,069.57	786.99
12/9/2012	418.91	192	1,155.91	1,125.68
12/8/2012	457.24	210	1,366.11	1,202.72
12/7/2012	488.28	224	973.92	445.68
12/6/2012	505.15	232	1,221.91	806.47
12/5/2012	491.61	225	984.68	683.2
12/4/2012	426.02	195	825.36	136.64
12/3/2012	358.46	164	714.02	706.75
12/2/2012	608.73	279	1,325.70	1,160.27
12/1/2012	493.19	226	1,182.95	238.39
11/30/2012	0	0	0	0
11/29/2012	0	0	0	0
11/28/2012	0	0	0	0
11/27/2012	0	0	0	0
11/26/2012	0	0	0	0
11/25/2012	0	0	0	0
11/24/2012	0	0	0	0
11/23/2012	0	0	0	0
11/22/2012	0	0	0	0
11/21/2012	0	0	0	0
11/20/2012	0	0	0	0
11/19/2012	0	0	0	0
11/18/2012	0	0	0	0
11/17/2012	0	0	0	0
11/16/2012	0	0	0	0
11/15/2012	0	0	0	0
11/14/2012	0	0	0	0
11/13/2012	0	0	0	0
11/12/2012	0	0	0	0
11/11/2012	0	0	0	0
11/10/2012	0	0	0	0
11/9/2012	0	0	0	0
11/8/2012	0	0	0	0
11/7/2012	0	0	0	0
11/6/2012	0	0	0	0
11/5/2012	0	0	0	0
11/4/2012	0	0	0	0
11/3/2012	0	0	0	0
11/2/2012	0	0	0	0
11/1/2012	0	0	0	0
10/31/2012	947.81	179	1,405.26	538.53
10/30/2012	375.16	71	880.3	521.28

WC 100-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
10/28/2012	544.66	225	338.72	0
10/27/2012	618.45	255	702.71	0
10/26/2012	644.89	266	336.24	0
10/25/2012	629.04	260	74.65	0
10/24/2012	846.11	349	1.82	0
10/23/2012	716.2	296	1.82	0
10/22/2012	0	0	5	0
10/21/2012	0	0	5	0
10/20/2012	941.36	389	5	0
10/19/2012	1,321.96	546.00	5	0
10/18/2012	0	0	0	0
10/17/2012	0	0	0	0
10/16/2012	0	0	0	0
10/15/2012	0	0	0	0
10/14/2012	0	0	0	0
10/13/2012	0	0	0	0
10/12/2012	0	0	0	0
10/11/2012	0	0	0	0
10/10/2012	0	0	0	0
10/9/2012	0	0	0	0
10/8/2012	0	0	0	0
10/7/2012	0	0	0	0
10/6/2012	0	0	0	0
10/5/2012	0	0	0	0
10/4/2012	0	0	0	0
10/3/2012	751.77	310	5	0
10/2/2012	286.26	118	5	0
10/1/2012	131.56	54	564	0
9/30/2012	403.4	143	573	0
9/29/2012	420.38	149	372.25	0
9/28/2012	440.41	156	418.87	0
9/27/2012	269.7	96	366.61	0
9/26/2012	440.42	156	603.13	0
9/25/2012	1,378.51	489.00	0	0
9/24/2012	435.26	155	0	0
9/23/2012	929.2	330	0	0
9/22/2012	1,315.89	467.00	3.96	0
9/21/2012	490.27	174	0	0

Totals	**132,945.7**	**40,695.0**	**211,750.2**	**121,532.9**
Daily AVG	**377.7**	**115.6**	**601.6**	**345.3**
Daily MAX	**2,079.1**	**546.0**	**6,741.0**	**2,838.0**

First 30 Days	Oil Prod (bbls)	Water Prod (bbls)	Gas Sales (mcfd)	Water Prod (bbls)
Daily AVG	940.2	261.7	2,538.2	903.7
0.6 Decline Factor	564.1	157.0	1,522.9	542.2

	Oil Prod (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Water Prod (bbls)
AVG Last 30 Days	**233.1**	**85.2**	**244.4**	**114.6**
0.6 Decline Factor	139.9	51.1	146.6	68.8

WC 102-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
Totals	**65,056.7**	**29,034.0**	**120,730.0**	**98,430.6**
Daily AVG	**207.8**	**92.8**	**385.7**	**314.5**
Daily MAX	**947.8**	**433.0**	**1,940.9**	**1,242.1**

First 30 Days	Oil Prod (bbls)	Water Prod (bbls)	Gas Sales (mcfd)	Water Prod (bbls)
Daily AVG	376.9	172.8	839.4	632.5
0.6 Decline Factor	226.2	103.7	503.6	379.5

	Oil Prod (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Water Prod (bbls)
AVG Last 30 Days	**552.2**	**316.2**	**994.3**	**992.2**
0.6 Decline Factor	331.3	189.7	596.6	595.3

WC 3-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
9/7/2013	759.83	263	1,261.38	645.81
9/6/2013	666.33	231	1,233.99	716.57
9/5/2013	711.38	247	1,310.37	741.93
9/4/2013	818.91	284	1,312.25	617.66
9/3/2013	809.72	281	1,301.98	527.66
9/2/2013	854.08	296	1,173.53	177.58
9/1/2013	675.35	234	1,077.67	580.93
8/31/2013	923.31	320	1,719.42	1,347.87
8/30/2013	830.34	288	1,445.07	638.51
8/29/2013	823.43	286	1,431.54	8.18
8/28/2013	798	277	1,442.50	425.27
8/27/2013	846.3	293	1,449.40	921.88
8/26/2013	840.58	291	1,456.38	1,151.39
8/25/2013	845.17	293	1,472.94	1,082.53
8/24/2013	868.31	301	1,454.25	340.55
8/23/2013	874.96	303	1,432.44	480.29
8/22/2013	908.69	315	1,386.43	817.42
8/21/2013	871.92	302	1,370.75	405.01
8/20/2013	837.79	291	1,364.45	539.55
8/19/2013	889.1	308	1,361.60	1,100.40
8/18/2013	837.14	290	1,362.34	1,182.03
8/17/2013	840.72	292	1,362.57	753.51
8/16/2013	820.34	284	1,344.73	994.75
8/15/2013	838.6	291	1,089.59	512.59
8/14/2013	666.02	231	1,253.90	1.43
8/13/2013	942.53	327	1,194.53	14.27
8/12/2013	803.68	279	1,410.49	1,142.75
8/11/2013	847.37	294	1,253.49	877.85
8/10/2013	827.02	287	1,153.40	556.3
8/9/2013	818.22	277	1,116.85	617.79
8/8/2013	622.4	216	1,033.81	588.77
8/7/2013	883.4	306	1,278.26	523.56
8/6/2013	825.85	286	1,213.37	474.48
8/5/2013	949.27	329	1,278.81	682.73
8/4/2013	848.11	294	1,283.45	581.6
8/3/2013	872.37	303	1,297.58	865.71
8/2/2013	890.02	315	1,287.38	861.2
8/1/2013	322.57	112	565.8	284.95
7/31/2013	830.82	266	1,518.91	297.91
7/30/2013	1,076.06	344.00	1,828.81	616.76
7/29/2013	981.57	314	1,756.11	668.68
7/28/2013	980.12	314	1,850.97	751.03
7/27/2013	956.8	306	1,786.13	684.21
7/26/2013	1,041.74	333.00	1,722.50	633.29
7/25/2013	931.05	298	1,750.16	1,392.74
7/24/2013	798.01	255	1,536.05	1,331.89
7/23/2013	1,044.07	334.00	1,374.79	1,169.17
7/22/2013	707.99	227	1,497.07	616.94
7/21/2013	1,066.42	341.00	1,923.16	0.74
7/20/2013	1,048.84	336.00	1,776.37	1.04
7/19/2013	1,082.50	346.00	2,113.77	159.94
7/18/2013	1,141.36	365.00	1,977.83	909.12
7/17/2013	1,038.76	332.00	1,790.93	1,205.87
7/16/2013	1,004.43	321.00	1,362.41	685.86
7/15/2013	978.9	313	686.42	461.65
7/14/2013	865.16	277	1,528.06	741.99
7/13/2013	795.67	255	1,454.88	743.36
7/12/2013	821.46	263	1,484.20	746.32
7/11/2013	754.8	242	1,382.99	834.62
7/10/2013	832.29	266	1,501.56	1,183.73
7/9/2013	823.35	263	1,492.22	1,284.59
7/8/2013	844.5	270	1,515.17	1,263.09
7/7/2013	844.8	270	1,540.39	999.69

WC 4-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
9/7/2013	631.22	332	1,110.85	568.75
9/6/2013	515.46	269	1,009.51	586.22
9/5/2013	669.65	324	1,196.13	677.25
9/4/2013	770.87	373	1,197.85	563.81
9/3/2013	762.22	368	1,188.47	481.66
9/2/2013	803.98	389	1,071.22	162.1
9/1/2013	635.73	307	983.72	530.28
8/31/2013	869.14	420	1,569.52	1,230.37
8/30/2013	815.62	394	1,376.44	608.19
8/29/2013	775.13	375	1,306.73	7.47
8/28/2013	751.19	363	1,316.74	388.2
8/27/2013	796.66	385	1,323.04	841.51
8/26/2013	791.27	382	1,329.42	1,051.01
8/25/2013	795.59	385	1,344.53	988.15
8/24/2013	817.38	395	1,327.46	310.86
8/23/2013	823.63	398	1,307.56	438.42
8/22/2013	855.39	413	1,265.56	746.15
8/21/2013	828.53	400	1,251.25	369.7
8/20/2013	788.64	381	1,245.49	492.52
8/19/2013	836.94	405	1,242.90	1,004.47
8/18/2013	788.03	381	1,243.57	1,078.98
8/17/2013	791.4	383	1,243.78	687.82
8/16/2013	772.22	373	1,227.50	908.03
8/15/2013	789.41	382	994.6	467.91
8/14/2013	626.95	303	1,144.59	1.31
8/13/2013	887.24	429	1,090.39	13.03
8/12/2013	825.31	399	1,404.57	1,137.95
8/11/2013	797.66	386	1,144.21	801.31
8/10/2013	778.51	376	1,052.85	507.8
8/9/2013	770.22	337	1,019.48	563.93
8/8/2013	669.59	296	1,078.49	614.22
8/7/2013	831.58	368	1,166.82	477.91
8/6/2013	777.41	344	1,107.59	433.11
8/5/2013	893.58	396	1,167.33	623.21
8/4/2013	798.36	354	1,171.55	530.89
8/3/2013	821.19	364	1,184.45	790.24
8/2/2013	837.8	375	1,175.15	786.12
8/1/2013	425.11	189	723.07	364.16
7/31/2013	570.39	343	824.39	161.69
7/30/2013	738.76	444	992.59	334.75
7/29/2013	709.68	416	953.13	362.93
7/28/2013	672.89	405	1,004.62	407.62
7/27/2013	656.87	395	969.42	371.36
7/26/2013	715.19	430	934.89	343.72
7/25/2013	639.2	384	949.9	755.91
7/24/2013	547.86	329	833.7	722.89
7/23/2013	716.79	431	746.17	634.57
7/22/2013	324.04	195	541.7	223.23
7/21/2013	732.13	440	1,043.80	0.4
7/20/2013	720.06	433	964.13	0.57
7/19/2013	309.65	186	478.02	36.17
7/18/2013	783.58	471	1,073.47	493.43
7/17/2013	713.14	429	972.03	654.49
7/16/2013	689.58	415	739.45	372.25
7/15/2013	672.05	404	372.56	250.56
7/14/2013	593.97	357	829.36	402.72
7/13/2013	546.26	328	789.64	403.46
7/12/2013	563.96	339	805.55	405.07
7/11/2013	518.2	312	750.62	452.99
7/10/2013	571.39	344	814.98	642.47
7/9/2013	565.26	340	809.91	697.21
7/8/2013	579.78	349	822.36	685.55
7/7/2013	579.98	349	836.05	542.58

WC 101-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
9/7/2013	121.41	95	182.95	93.67
9/6/2013	142.6	112	239.7	139.19
9/5/2013	152.24	119	254.53	144.12
9/4/2013	196.28	154	285.49	134.38
9/3/2013	168.66	132	246.16	99.76
9/2/2013	207.15	162	258.35	39.09
9/1/2013	146.46	115	212.13	114.35
8/31/2013	21.08	17	35.63	27.93
8/30/2013	237.34	186	374.92	165.66
8/29/2013	225.56	177	355.93	2.03
8/28/2013	218.6	171	358.66	105.74
8/27/2013	231.82	182	360.37	229.21
8/26/2013	223.06	175	350.79	277.33
8/25/2013	217.04	170	343.34	252.33
8/24/2013	237.86	186	361.58	84.67
8/23/2013	224.7	176	333.9	111.95
8/22/2013	248.92	195	344.72	203.24
8/21/2013	238.84	187	340.82	100.7
8/20/2013	229.49	180	339.25	134.15
8/19/2013	243.55	191	338.54	273.6
8/18/2013	229.32	180	338.73	293.9
8/17/2013	230.3	181	338.78	187.35
8/16/2013	224.71	176	334.35	247.33
8/15/2013	229.72	180	270.91	127.45
8/14/2013	182.44	143	311.77	0.36
8/13/2013	258.18	202	297	3.55
8/12/2013	240.16	188	382.58	309.96
8/11/2013	232.12	182	311.66	218.26
8/10/2013	226.54	178	286.78	138.32
8/9/2013	224.13	172	277.69	153.61
8/8/2013	194.85	153	293.76	167.3
8/7/2013	241.99	190	317.82	130.18
8/6/2013	226.22	177	301.69	117.97
8/5/2013	260.03	204	317.96	169.75
8/4/2013	232.32	182	319.11	144.61
8/3/2013	238.96	187	322.62	215.25
8/2/2013	243.8	195	320.09	214.12
8/1/2013	123.7	97	196.95	99.19
7/31/2013	263.57	221	332.45	65.2
7/30/2013	341.38	287	400.27	134.99
7/29/2013	311.4	261	384.36	146.35
7/28/2013	310.94	261	405.12	164.38
7/27/2013	303.54	255	390.93	149.75
7/26/2013	234.09	197	267.04	98.18
7/25/2013	0	0	0	0
7/24/2013	0	0	0	0
7/23/2013	0	0	0	0
7/22/2013	0	0	0	0
7/21/2013	0	0	0	0
7/20/2013	0	0	0	0
7/19/2013	143.09	120	192.77	14.59
7/18/2013	362.09	304	432.89	198.98
7/17/2013	329.54	277	391.98	263.93
7/16/2013	318.65	268	298.19	150.12
7/15/2013	310.55	261	150.24	101.04
7/14/2013	274.47	230	334.45	162.4
7/13/2013	252.42	212	318.43	162.7
7/12/2013	260.6	219	324.85	163.35
7/11/2013	239.46	201	302.7	182.67
7/10/2013	264.04	222	328.65	259.08
7/9/2013	261.2	219	326.6	281.16
7/8/2013	267.91	225	331.63	276.45
7/7/2013	268.01	225	337.15	218.8

WC 3-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
7/6/2013	886.61	284	1,578.24	1,282.55
7/5/2013	901.8	289	1,626.19	1,208.24
7/4/2013	927.12	297	1,603.47	1,261.24
7/3/2013	934.43	299	1,608.19	1,218.34
7/2/2013	964.7	309	1,608.82	1,232.81
7/1/2013	987.5	316	1,138.83	681.2
6/30/2013	473.62	269	1,013.85	606.78
6/29/2013	463.24	263	991.56	925.76
6/28/2013	425.52	242	877.71	707.05
6/27/2013	449.05	255	1,039.78	985.19
6/26/2013	404.26	229	1,292.71	1,190.27
6/25/2013	439.89	250	1,240.07	1,149.11
6/24/2013	435.34	247	1,196.73	1,195.35
6/23/2013	441.43	251	1,250.43	682.73
6/22/2013	454.88	258	1,127.11	999.17
6/21/2013	329.2	187	778.13	490.01
6/20/2013	359.91	204	775.88	554.15
6/19/2013	589.05	334	1,193.73	243.05
6/18/2013	495.51	281	1,211.39	544.74
6/17/2013	480.79	273	707.35	399.26
6/16/2013	480.5	273	1,345.97	679.53
6/15/2013	517.25	294	1,079.87	593.01
6/14/2013	707.73	402	1,181.17	686.65
6/13/2013	580.21	329	1,383.46	636.95
6/12/2013	501.74	285	1,049.05	541.76
6/11/2013	282.32	160	732.2	324.56
6/10/2013	302.32	172	1,028.58	69.87
6/9/2013	642.41	365	429.72	214.44
6/8/2013	279.16	158	654.52	583.38
6/7/2013	362.6	206	777.03	505.48
6/6/2013	373.94	212	777.31	692.41
6/5/2013	325.21	185	810.58	771.63
6/4/2013	345.75	196	811.46	773.56
6/3/2013	144.02	82	295.82	206.69

Totals	**71,889.6**	**26,824.0**	**125,607.5**	**69,004.4**
Daily AVG	**741.1**	**276.5**	**1,294.9**	**711.4**
Daily MAX	**1,141.4**	**402.0**	**2,113.8**	**1,392.7**

First 30 Days	Oil Prod (bbls)	Water Prod (bbls)	Gas Sales (mcfd)	Water Prod (bbls)
Daily AVG	468.0	249.6	993.4	662.2
0.6 Decline Factor	280.8	149.7	596.0	397.3

	Oil Prod (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Water Prod (bbls)
AVG Last 30 Days	**823.2**	**285.2**	**1,333.3**	**664.0**
0.6 Decline Factor	493.9	171.1	800.0	398.4

WC 4-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
7/6/2013	608.69	366	856.59	696.11
7/5/2013	619.12	372	882.62	655.77
7/4/2013	636.5	383	870.29	684.54
7/3/2013	682.05	398	872.85	661.26
7/2/2013	662.3	398	873.19	669.11
7/1/2013	677.96	408	618.1	369.72
6/30/2013	865.79	838	982.65	588.11
6/29/2013	846.8	820	961.04	897.28
6/28/2013	817.79	792	850.7	685.29
6/27/2013	820.88	795	1,007.78	954.87
6/26/2013	477.26	462	809.18	745.06
6/25/2013	804.13	779	1,201.90	1,113.75
6/24/2013	795.8	771	1,159.90	1,158.56
6/23/2013	806.94	781	1,211.95	661.71
6/22/2013	845.41	819	1,092.43	968.42
6/21/2013	601.78	583	754.18	474.93
6/20/2013	657.92	637	752	537.09
6/19/2013	1,076.80	1,043.00	1,156.99	235.57
6/18/2013	965.71	935	1,174.11	527.98
6/17/2013	878.88	851	685.58	386.97
6/16/2013	768.56	744	1,141.48	576.29
6/15/2013	945.53	915	1,046.63	574.76
6/14/2013	1,293.74	1,253.00	1,144.82	665.52
6/13/2013	1,060.63	1,027.00	1,340.88	617.35
6/12/2013	917.18	888	1,016.77	525.09
6/11/2013	516.08	500	709.67	314.57
6/10/2013	552.65	535	996.93	67.72
6/9/2013	1,174.34	1,137.00	416.49	207.84
6/8/2013	510.31	494	634.37	565.42
6/7/2013	662.83	642	753.12	489.93
6/6/2013	683.56	662	753.39	671.1
6/5/2013	594.49	576	785.64	747.88
6/4/2013	632.04	612	786.49	749.75
6/3/2013	514.15	484	529.32	369.83
6/2/2013	242.5	235	268.68	268.03
6/1/2013	419.44	203	395.03	153.53

Totals	**71,283.0**	**47,299.0**	**97,650.6**	**54,430.3**
Daily AVG	**720.0**	**477.8**	**986.4**	**549.8**
Daily MAX	**1,293.7**	**1,253.0**	**1,569.5**	**1,230.4**

First 30 Days	Oil Prod (bbls)	Water Prod (bbls)	Gas Sales (mcfd)	Water Prod (bbls)
Daily AVG	758.3	727.1	884.0	583.3
0.6 Decline Factor	455.0	436.3	530.4	350.0

	Oil Prod (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Water Prod (bbls)
AVG Last 30 Days	**772.0**	**373.6**	**1,217.7**	**607.2**
0.6 Decline Factor	463.2	224.1	730.6	364.3

WC 101-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
7/6/2013	281.27	236	345.43	280.71
7/5/2013	286.09	240	355.93	264.45
7/4/2013	294.12	247	350.95	276.05
7/3/2013	296.44	249	351.99	266.66
7/2/2013	306.04	257	352.12	269.83
7/1/2013	313.28	263	249.26	149.1
6/30/2013	1,340.82	466.00	0	0
6/29/2013	1,311.41	456.00	0	0
6/28/2013	1,204.63	419.00	0	0
6/27/2013	1,271.26	442.00	0	0
6/26/2013	1,144.45	398.00	0	0
6/25/2013	1,245.33	433.00	0	0
6/24/2013	1,232.43	428.00	0	0
6/23/2013	1,249.69	434.00	0	0
6/22/2013	1,287.76	447.00	0	0
6/21/2013	931.96	324	0	0
6/20/2013	1,018.89	354.00	0	0
6/19/2013	1,667.60	579.00	0	0
6/18/2013	1,402.78	487.00	0	0
6/17/2013	1,361.10	473.00	0	0
6/16/2013	1,360.28	473.00	0	0
6/15/2013	1,464.32	509.00	0	0
6/14/2013	2,003.57	696.00	0	0
6/13/2013	1,642.56	571.00	0	0
6/12/2013	1,420.41	494.00	0	0
6/11/2013	1,534.53	533.00	0	0
6/10/2013	855.88	297	0	0
6/9/2013	1,818.66	632.00	0	0
6/8/2013	790.31	275	0	0
6/7/2013	1,026.50	357.00	0	0
6/6/2013	1,058.61	368.00	0	0
6/5/2013	920.67	320	0	0
6/4/2013	978.82	340	0	0
6/3/2013	752.71	262	0	0
6/2/2013	751.12	261	0	0
6/1/2013	1,039.31	361.00	0	0
5/31/2013	1,403.96	488.00	0	0
5/30/2013	0	0	0	0
5/29/2013	0	0	0	0
5/28/2013	1,193.38	415.00	0	0
5/27/2013	0	0	0	0
5/26/2013	0	0	0	0
5/25/2013	1,556.03	541.00	0	0
5/24/2013	790.7	275	0	0
5/23/2013	0	0	0	0
5/22/2013	0	0	0	0
5/21/2013	0	0	0	0
5/20/2013	0	0	0	0
5/19/2013	0	0	0	0
5/18/2013	0	0	0	0
5/17/2013	2,201.00	765.00	0	0
5/16/2013	2,027.73	705.00	0	0
5/15/2013	1,903.16	661.00	0	0
5/14/2013	1,829.83	636.00	0	0
5/13/2013	1,966.22	683.00	0	0
5/12/2013	2,664.97	926.00	0	0
5/11/2013	2,817.59	979.00	0	0
5/10/2013	2,564.45	891.00	0	0
5/9/2013	2,596.25	902.00	0	0
5/8/2013	347.97	121	0	0
5/7/2013	2,321.72	807.00	0	0
5/6/2013	921.33	320	0	0

WC 3-2413H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)

WC 4-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)

WC 101-2425H

Date	Oil Sales (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Gas Sales (mcfd)
5/5/2013	0	0	0	0
5/4/2013	0	0	0	0
5/3/2013	0	0	0	0
5/2/2013	0	0	0	0
5/1/2013	0	0	0	0
4/30/2013	0	0	0	0
4/29/2013	0	0	0	0
4/28/2013	0	0	0	0
4/27/2013	0	0	0	0
4/26/2013	0	0	0	0
4/25/2013	2,102.13	730.00	0	0
4/24/2013	1,861.80	647.00	0	0
4/23/2013	1,719.24	597.00	0	0
4/22/2013	1,564.00	543.00	0	0
4/21/2013	1,530.02	532.00	0	0
4/20/2013	810.57	282	0	0
4/19/2013	1,194.90	415.00	0	0
4/18/2013	864.73	300	0	0
4/17/2013	712.72	248	0	0
4/16/2013	1,352.09	470.00	0	0
4/15/2013	1,372.11	477.00	0	0
4/14/2013	0	0	0	0
4/13/2013	2,129.48	740.00	0	0
4/12/2013	708.72	246	0	0

Totals	**99,183.5**	**41,437.0**	**19,714.4**	**10,372.5**
Daily AVG	**665.7**	**278.1**	**132.3**	**69.6**
Daily MAX	**2,817.6**	**979.0**	**432.9**	**310.0**

First 30 Days	Oil Prod (bbls)	Water Prod (bbls)	Gas Sales (mcfd)	Water Prod (bbls)
Daily AVG	983.1	341.6	0.0	0.0
0.6 Decline Factor	589.8	204.9	0.0	0.0

	Oil Prod (bbls)	Water Prod (bbls)	Gas Prod (mcfd)	Water Prod (bbls)
AVG Last 30 Days	**207.0**	**162.1**	**302.3**	**147.1**
0.6 Decline Factor	124.2	97.3	181.4	88.3

Appendix D

Oil and Gas Analyses

PRECISION ANALYSIS
GAS MEASUREMENT EMISSIONS TESTING LABORATORY
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EXTENDED HYDROCARBON LIQUID STUDY
CERTIFICATE OF ANALYSIS

Company:	**EOG Resources**	Sample Name:	**West Clark Group #100 & #3**
Date Sampled:	06/27/2013	Sample Number:	13070207-14
Sample Location:	North Dakota	Date Tested:	07/09/2013
Sample Pressure:	37 PSI	Test Method:	GPA 2186M
Sample Temperature:	106 DEG F		
County:	McKenzie	Date Reported:	7/15/2013
		Note: Due to the nature of H2S, the values of	
Sampling Method:	GPA-2174	H2S reported may be lower than actual.	
Type Sample:	SPOT		

Components	Mole %	Weight %	Liq. Vol. %
Hydrogen Sulfide	0.0000	0.000	0.000
Oxygen	0.0000	0.000	0.000
Carbon Dioxide	0.0000	0.000	0.000
Nitrogen	0.0245	0.004	0.004
Methane	0.9743	0.097	0.249
Ethane	1.9801	0.368	0.798
Propane	3.4467	0.938	1.430
iso-Butane	0.9413	0.338	0.464
n-Butane	4.0592	1.457	1.927
iso-Pentane	1.9884	0.886	1.095
n-Pentane	3.5478	1.581	1.937
Hexanes	2.8655	1.525	1.775
Heptanes	7.1857	4.446	4.993
Octanes	5.7610	4.063	4.445
Nonanes	2.5262	2.001	2.141
Decanes+	56.5466	77.538	73.958
Benzene	0.3638	0.175	0.153
Toluene	1.8046	1.027	0.910
Ethylbenzene	0.7109	0.466	0.413
Xylenes	1.5039	0.986	0.880
n-Hexane	3.1961	1.701	1.979
2,2,4-Trimethylpentane	0.5732	0.404	0.449
Totals	100.000	100.000	100.000

ADDITIONAL BTEX DATA

Components	Mole %	Weight %	Liq. Vol. %
2-Methylpentane	2.049	1.090	1.269
3-Methylpentane	0.817	0.435	0.506
n-Hexane	3.196	1.701	1.979
2,2,4-Trimethylpentane	0.573	0.404	0.449
Benzene	0.364	0.175	0.153
Toluene	1.805	1.027	0.910
Ethylbenzene	0.711	0.466	0.413
m-Xylene	0.173	0.113	0.101
p-Xylene	1.075	0.705	0.629
o-Xylene	0.256	0.168	0.150

API GRAVITY AT 60/60 F, calculated	**51.6**
SPECIFIC GRAVITY AT 60/60 F, calculated	**0.77293**
RELATIVE SPECIFIC GRAVITY OF DECANES+ (C10+) FRACTION, calculated	**0.81034**
AVERAGE MOLECULAR WEIGHT	**161.949**
AVERAGE MOLECULAR WEIGHT OF DECANES+ (C10+) FRACTION, calculated	**222.068**
TRUE VAPOR PRESSURE AT 100 F, PSIA, calculated	**75.327**
AVERAGE BOILING POINT, F, calculated	**358.094**
CUBIC FEET OF GAS / GALLON OF LIQUID, as Ideal Gas, calculated	**18.642**
BTU / GALLON OF LIQUID AT 14.73 PSIA, calculated	**123,589.01**
LBS / GALLON OF LIQUID, calculated	**6.444**

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.

FLASHED CRUDE OIL LIQUID STUDIES
CERTIFICATE OF ANALYSIS

Sample Name: **West Clark Group**
Sample Number: 13070207-14

TEST PERFORMED	RESULTS	DATE TESTED
API GRAVITY AT 60/60 F, (ASTM D-1298), calculated from SG	41.7	07/09/2013
SPECIFIC GRAVITY AT 60/60 F (ASTM D-1657), measured	0.8168	07/09/2013
REID VAPOR PRESSURE (ASTM D6378), PSIG AT 100 F, measured	3.03	07/09/2013

Sample ID No.:	13070207-14
Sample Description:	West Clark Group #100 & #3
Sample Date:	6/27/2013
Laboratory:	Precision Analysis

Component	yi (Mol %) [1]	(Wt %)
Hydrogen Sulfide	0.0000	0.0000
Oxygen	0.0000	0.0000
Carbon Dioxide	0.0000	0.0000
Nitrogen	0.0245	0.0040
Methane	0.9743	0.0970
Ethane	1.9801	0.3680
Propane	3.4467	0.9380
Isobutane	0.9413	0.3380
n-Butane	4.0592	1.4570
Isopentane	1.9884	0.8860
n-Pentane	3.5478	1.5810
Hexanes	2.8655	1.5250
Heptanes	7.1857	4.4460
Octanes	5.7610	4.0630
Nonanes	2.5262	2.0010
Decanes Plus	56.5466	77.5380
Benzene	0.3638	0.1750
Toluene	1.8046	1.0270
Ethylbenzene	0.7109	0.4660
Xylenes (Total)	1.5309	0.9860
n-Hexane	3.1961	1.7010
2,2,4-TMP	0.5732	0.4040
Total	100.03	100.00

Sample Temperature	106	°F
Sample Pressure	37	psig
Molecular Weight	161.9490	lb/lb-mol
Specific Gravity	0.7729	
RVP	3.03	psig
API Gravity	41.7	

PRECISION ANALYSIS
GAS MEASUREMENT EMISSIONS TESTING LABORATORY
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Client:	EOG Resources	**Analysis Date:**	7/2/2013
Sample ID:	West Clark Ck East Group Treater	**Date Sampled:**	7/4/2013
Unique #:	0	**Purpose:**	#1,#5 & #100
Sample Temperature:	100.7 F	**Sample Pressure:**	82.0 psia
Sampled By:	Scott Fairfield	**Type Sample:**	Cylinder
County:	McKenzie		

Components	Mole %	Weight %	Liq. Vol. %	BTU	GPM	Fraction Spec. Grav.
Carbon Dioxide	0.7140	1.1365	0.5603	0.0000	0.0000	0.0108
Hydrogen Sulfide	0.0005	0.0006	0.0003	0.0031	0.0001	0.0000
Nitrogen	2.1361	2.1642	1.0807	0.0000	0.0000	0.0207
Methane	55.5167	32.2111	43.2801	560.7190	0.0000	0.3075
Ethane	20.6025	22.4051	25.3370	364.6019	5.4958	0.2139
Propane	11.5967	18.4943	14.6918	291.7834	3.1867	0.1766
iso-Butane	1.3043	2.7418	1.9627	42.4159	0.4257	0.0262
n-Butane	3.9016	8.2015	5.6563	127.2821	1.2269	0.0783
iso-Pentane	0.7261	1.8946	1.2210	29.0487	0.2648	0.0181
n-Pentane	1.0948	2.8568	1.8249	43.8881	0.3958	0.0273
Cyclopentane	0.0719	0.1823	0.0979	2.5243	0.0212	0.0017
n-Hexane	0.4807	1.4980	0.9089	22.8594	0.1972	0.0143
Cyclohexane	0.3277	0.9975	0.5126	13.6982	0.1112	0.0095
Other Hexanes	0.3962	1.2349	0.7492	17.4152	0.1612	0.0118
Heptanes	0.3002	1.0879	0.6369	16.5183	0.1381	0.0104
Methylcyclohexane	0.2633	0.9349	0.4864	12.8052	0.1055	0.0089
2,2,4-Trimethylpentane	0.0151	0.0624	0.0361	0.8726	0.0078	0.0006
Benzene	0.1986	0.5611	0.2554	7.1325	0.0554	0.0054
Toluene	0.1512	0.5038	0.2327	6.4613	0.0505	0.0048
Ethylbenzene	0.0020	0.0078	0.0036	0.1012	0.0008	0.0001
Xylenes	0.0101	0.0389	0.0180	0.5022	0.0039	0.0004
C8+ Heavies	0.1898	0.7840	0.4470	11.8584	0.0970	0.0075
Totals	100.0000	100.0000	100.0000	1572.4911	11.9456	0.9547

ADDITIONAL BETX DATA

Components	Mole %	Weight %	Liq. Vol. %
Cyclopentane	0.0719	0.1823	0.0979
Cyclohexane	0.3277	0.9975	0.5126
2-Methylpentane	0.2494	0.7772	0.4716
3-Methylpentane	0.1468	0.4576	0.2777
n-Hexane	0.4807	1.4980	0.9089
Methylcyclohexane	0.2633	0.9349	0.4864
2,2,4-Trimethylpentane	0.0151	0.0624	0.0361
Benzene	0.1986	0.5611	0.2554
Toluene	0.1512	0.5038	0.2327
Ethylbenzene	0.0020	0.0078	0.0036
m-Xylene	0.0016	0.0062	0.0029
p-Xylene	0.0069	0.0263	0.0122
o-Xylene	0.0017	0.0064	0.0030

SPECIFIC GRAVITY @ 60/60 F, calculated	0.9547
TOTAL GPM (Ethane Inclusive)	11.946
CALCULATED BTU / REAL CF @ 14.73 PSIA, dry basis	1586.687
CALCULATED BTU / REAL CF @ 14.73 PSIA, wet basis	1559.800
AVERAGE MOLECULAR WEIGHT	1.269
MOLAR MASS RATIO	0.9547
RELATIVE DENSITY (G x Z (Air) / Z), calculated	0.9611
IDEAL GROSS HEATING VALUE, BTU/IDEAL CF @ 14.696 PSIA	1572.491
COMPRESSIBILITY FACTOR (Z)	0.99333

PROPANE GPM	3.1867
BUTANE GPM	1.6526
GASOLINE GPM (PENTANE AND HEAVIER)	1.6105

TOTAL ACID GAS MOLE %	0.7145
H2S MOLE %	0.0005
H2S PPM	5

VOC WEIGHT FRACTION	0.421

NOTATION: ALL CALCULATIONS PERFORMED USING PHYSICAL CONSTANTS FROM GPA 2145-09, THE TABLES OF PHYSICAL CONSTANTS FOR HYDROCARBONS AND OTHER COMPOUNDS OF INTEREST TO THE NATURAL GAS INDUSTRY.

Sample ID No.:	West Clark Ck East Group Treater
Sample Description:	West Clark CPF
Sample Date:	7/4/2013
Laboratory:	Precision Analysis

Component	MWi	yi (Mol %) [1]	yi (MolFrac)	yiMWi	lbi/lb (WtFrac)	(Wt %)
Oxygen	32	0.0000	0.0000	0.0000	0.0000	0.0000
Nitrogen	28.01	2.1361	0.0214	0.5983	0.0216	2.1642
Carbon Dioxide	44.01	0.7140	0.0071	0.3142	0.0114	1.1366
Hydrogen Sulfide	34.8	0.0005	0.0000	0.0002	0.0000	0.0006
Methane	16.041	55.5167	0.5552	8.9054	0.3221	32.2119
Ethane	30.063	20.6025	0.2060	6.1937	0.2240	22.4034
Propane	44.092	11.5967	0.1160	5.1132	0.1850	18.4950
Isobutane	58.118	1.3043	0.0130	0.7580	0.0274	2.7419
n-Butane	58.118	3.9016	0.0390	2.2675	0.0820	8.2019
Isopentane	72.114	0.7261	0.0073	0.5236	0.0189	1.8940
n-Pentane	72.114	1.0948	0.0109	0.7895	0.0286	2.8557
Cyclopentane	70.13	0.0719	0.0007	0.0504	0.0018	0.1824
Cyclohexane	84.16	0.3277	0.0033	0.2758	0.0100	0.9976
2,2-Dimethylbutane	86.18		0.0000	0.0000	0.0000	0.0000
2,3-Dimethylbutane	86.18		0.0000	0.0000	0.0000	0.0000
2-Methyl Pentane	86.18		0.0000	0.0000	0.0000	0.0000
3-Methyl Pentane	86.18		0.0000	0.0000	0.0000	0.0000
Other Hexanes	86.18	0.3962	0.0040	0.3414	0.0124	1.2350
Methycyclohexane	98.19	0.2633	0.0026	0.2585	0.0094	0.9351
Heptanes	100.21	0.3002	0.0030	0.3008	0.0109	1.0881
Octanes + Heavies	114.23	0.1898	0.0019	0.2168	0.0078	0.7842
Nonanes	128.26	0.0000	0.0000	0.0000	0.0000	0.0000
Decanes Plus	142.29		0.0000	0.0000	0.0000	0.0000
n-Hexane	**86.17**	0.4807	0.0048	0.4142	0.0150	1.4983
Benzene	**78.12**	0.1986	0.0020	0.1551	0.0056	0.5612
Toluene	**92.15**	0.1512	0.0015	0.1393	0.0050	0.5040
Ethylbenzene	**106.17**	0.0020	0.0000	0.0021	0.0001	0.0077
Xylenes (Total)	**106.17**	0.0101	0.0001	0.0107	0.0004	0.0388
2,2,4-TMP	**114.23**	0.0151	0.0002	0.0172	0.0006	0.0624
Total		100.00	1.00		1.00	100.00
Total Hydrocarbon (HC)			0.9715		0.9670	96.6986
Total VOC (C3+)			0.2103		**0.4208**	**42.0833**
Total HAP			0.0086		**0.0267**	**2.6723**
			Total MW	**27.65 lb/lb-mol**		
				H_2S Content (ppm)	5.00	

Sample Temperature	101	°F
Sample Pressure	82	psig

Lower Heating Value (dry)	**1,437 Btu/scf**
Lower Heating Value (dry)	19,942 Btu/lbm
Higher Heating Value (dry)	**1,575 Btu/scf**
Higher Heating Value (dry)	21,850 Btu/lbm

WC CPF Fuel Gas

EOG Resources, Inc. West Clark Fuel Gas Data

FUEL COMPONENT	MOLE FRAC	COMP MOLES CARB	MOLES CARBON	COMP MOLE HYD	MOLE HYD	COMP LHV (BTU/SCF)	LHV (BTU/SCF)	COMP HHV (BTU/SCF)	HHV (BTU/SCF)	COMP MW (LBM/LBMOLE)	MASS FRAC (LBM/LBMOLE FUEL)
methane	[redacted]	1	0.555167	4	2.220668	911.45	506.0069622	1012.32	562.0066574	16.032	8.900437344
ethane		2	0.41205	6	1.23615	1622.1	334.1931525	1773.42	365.3688555	30.048	6.1906392
propane		3	0.347901	8	0.927736	2322.01	269.2765337	2523.82	292.6798339	44.064	5.109969888
i-butane		4	0.052172	10	0.13043	3008.96	39.24586528	3261.17	42.53544031	58.08	0.75753744
n-butane		4	0.156064	10	0.39016	3018.48	117.7690157	3270.69	127.609241	58.08	2.26604928
i-pentane		5	0.036305	12	0.087132	3708.01	26.92386061	4010.71	29.12176531	72.096	0.523489056
n-pentane		5	0.05474	12	0.131376	3717.15	40.6953582	4019.65	44.0071282	72.096	0.789307008
hexane		6	0.140094	14	0.326886	4415.23	103.0912053	4768.27	111.3343362	86.172	2.012030028
co2										44	0.31416
n2										28	0.598108
			1.754493		5.450538		1437.201953		1574.663258		
	0.99928										27.46172724

Specific Gravity	0.948
Lower Heating Value (BTU/scf)	1437
Lower Heating Value (BTU/lbm)	19942
Higher Heating Value (BTU/scf)	1575
Higher Heating Value (BTU/lbm)	21850

	Moles	Mass	Mass Frac
Carbon	1.761633	21.15721	0.769971
Hydrogen	5.450538	5.494142	0.199947
Oxygen	0.01428	0.22848	0.008315
Nitrogen	0.042722	0.598108	0.021767
		27.47794	

METHOD 19 FUEL FACTORS

Fd (Equations in Method 19, LHV)	9553
Fc (Equations in Method 19, LHV)	1239
Fd (Equations in Method 19, HHV)	8719
Fc (Equations in Method 19, HHV)	1131